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Evaluation of Statewide Long-Range Transportation Plans

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Acknowledgments

This report presents the results of a study of statewide long-range transportation plans completed for the FHWA Office of Intermodal and Statewide Programs by the U.S. Department of Transportation's Volpe National Transportation Systems Center. The review also produced a database with detailed information on major characteristics of the statewide plans.

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This report is available from the FHWA at: <http://www.fhwa.dot.gov/hep10/state/index.html> or from the Volpe Center by fax to William Lyons at (617) 494-3260 or by e-mail at: lyons@volpe.dot.gov.

TABLE OF CONTENTS

I.	Introduction.....	1
II.	Financial Planning.....	6
III.	Freight Transportation.....	13
IV.	Goals and Performance Measures.....	19
V.	Major Issues and Challenges.....	27
VI.	Plan Cycle.....	39
VII.	Public Involvement.....	41
VIII.	Relationships Between State DOTs and Other Governmental Agencies.....	49
IX.	Safety.....	59

I. Introduction

The U.S. Department of Transportation's Volpe National Transportation Systems Center wrote "Evaluation of Statewide Long-Range Transportation Plans" for the FHWA Office of Intermodal and Statewide Programs. This report is the result of a comprehensive review of statewide plans nationwide. The review also produced a database with detailed information on major characteristics of the statewide plans.

The goals of the research were to assess how individual states approach a series of important transportation planning themes in their plans; to identify national planning trends from this analysis; and to highlight "noteworthy practices." The noteworthy practice sections of the report provide short case studies of innovative approaches to the themes by individual states. The report and database are intended to provide insights and references for state planning stakeholders as they develop future plans that are increasingly informative and useful for decision-making.

The review focused on the statewide plans as a key product of planning processes in each state. The plans provide a "window" into current planning processes as they evolve to meet expectations of each state and the challenge to develop forward-looking, comprehensive, and collaborative planning processes, as encouraged by ISTEA and TEA-21. It is important to emphasize that this review was of the plans themselves and not of the processes that produced them. It is likely that additional innovative efforts are currently underway in each statewide planning process that are not apparent from the plans.

The research is based on a comprehensive evaluation of the 48 statewide plans available from a universe of 52 (50 states plus the District of Columbia and Puerto Rico).

The report is organized into modules covering eight topics:

- Financial planning
- Freight transportation
- Goals and performance measures
- Major issues and challenges facing the state
- Plan cycle
- Public involvement
- Relationships between state DOTs and other governmental agencies
- Safety

The companion database provides comprehensive information on the statewide plans, organized using the same categories as the modules, as well as other categories, including:

- Type of plan (strategic, vision, needs-based, investment)
- Availability of plan (update planned, web address)
- Approach to planning (how developed, links to other plans, top down, bottom up)
- Intermodal and multimodal (modes included, road, public transit, air, marine)
- Relationship indicated to other agencies (federal, other state, MPOs, local)
- Coverage of other topics (Tribal issues, environmental issues, Environmental Justice)

The evaluation of statewide plans indicates a great diversity in approach, content, and emphasis. Different plans do different things well. Some plans are updated frequently, while others remain in effect from the early years of ISTEA. Many reflect ambitious ongoing efforts to create a 20-30 year strategic vision in collaboration with MPOs, local governments, and citizens. Other plans indicate a commitment to broaden the approach in future updates. There is a great potential for these plans to continue to evolve into increasingly valuable components of the statewide planning process, and to become vital sources of information for decision-making.

A major characteristic of the plans discussed in the innovative practice sections is the ability to link multiple themes rather than to excel on a single dimension. For example, one plan might connect statewide public outreach with outreach undertaken by MPOs, develop a 20-year vision incorporating the results of this outreach, and rigorously assess probable costs and revenues to introduce financial realism.

This report and the companion database will assist statewide planners and others with an interest in statewide transportation planning to understand how plans are evolving nationwide. The report provides a resource to identify different practices and innovations. Hopefully the report will be useful to statewide planners and their partners as they continue to strengthen statewide planning.

II. Financial Planning¹

Unlike metropolitan transportation improvement programs and long-range plans, statewide long-range transportation plans do not have a requirement to be financially constrained; that is, to demonstrate the likelihood that funds will be available to cover all proposed projects. Although most plans consider the anticipated financial situation facing the state, they differ in approach, level of analysis, and detail. The plans generally recognize that there are limited dollars for identified projects, and identify likely funding shortfalls or gaps. Some address the shortfall created by the difference between available funds and projected costs, sometimes identifying and assessing options to bridge these gaps. Some plans provide information on anticipated costs and revenues by modal or other important transportation categories. Some plans go further, providing detailed financial plans, identifying options based on new and current funding sources, and assessing probabilities for these sources.

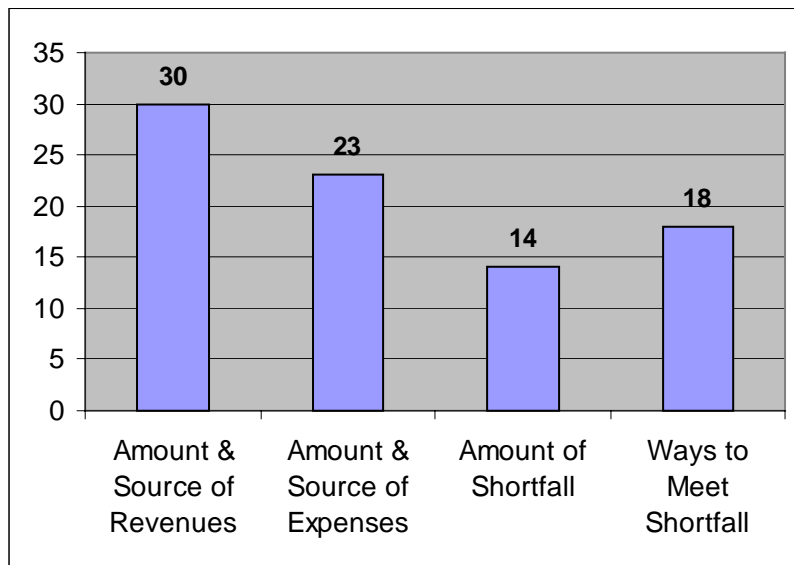
The plans that appear to provide the most thorough financial planning link several of the above elements – estimates of costs, revenues, and shortfalls; funding options using current and potential new revenues sources; and consideration of likelihood of these sources. Consideration of costs of capital and preservation of infrastructure are the dominant cost categories, but some plans also include discussion of operating costs. Most of the plans identify a long term “financially unconstrained vision” in terms of system performance, but this is often not linked to cost projections and options to secure new funds. A few plans also contain a “financially constrained vision,” describing the projects allowable with the existing funding. Some of the plans use financial analyses in their prioritization process to identify the trade-off decisions that must be made in a limited funding environment. Some plans also explicitly incorporate the financially constrained MPO plans into their financial analysis, allowing more realistic decision-making to take place on a statewide level. The noteworthy practice section of this module describes several plans that reflect this integrated approach.

This report considers “needs” as simply estimating costs for future projects. This is to be distinguished from “needs-based” plans that identify statewide performance goals and associated costs to meet these goals. As discussed in the “Goals and Performance Measures” module, many plans set long-range performance goals for the statewide system. As discussed later in this module, most plans estimate costs for the identified future system. However, the plans do not link projected costs to performance, for example, in a way that would allow identification of scenarios with associated performance and costs, and trade-off analysis of options on this basis.

Figure 1 identifies the number of state plans that address specific aspects of finance for the twenty-year transportation plan.

¹ Unless otherwise specified, all discussions refer to planning efforts as described in the actual Statewide Long-Range Transportation Plan. It is likely that additional efforts are underway in the statewide planning process. However, it is beyond the scope of this review to analyze efforts that are not described in the plan.

Figure 1: Aspects of Finance Addressed in State Plans



Available Revenues

As shown in the table, 30 of the 48 state plans identify revenue sources and project the amount anticipated from these sources. An additional thirteen plans identify the sources of revenues, but do not specify the anticipated amounts. Of the 30 that identify the projected revenue amounts, many plans, such as that of *Wyoming*, discuss the current funding level and assume that level would continue. *Wyoming* assumes that the current funding level will continue for the next five years, and does not project further than that. It states that forecasts beyond that period are futile because of the high degree of uncertainty regarding mineral revenues and federal-aid, based on the historical levels of fluctuations.

Financial Costs

Twenty-three of the 48 plans provide estimates of the financial costs for the projects presented in the plan. These cost estimates take various forms, depending on the presentation of the plan. For example, the *District of Columbia* organizes its projects into action items and presents a cost estimate for each. For each action item, the plan also identifies when costs are only for capital, such as for light rail transit corridors. Other action items include operations, maintenance or design costs, and are identified as such. For example, one action item proposes the construction of water taxi docks. The plan estimates that construction costs would be \$4.5 million, with an additional ten percent for feasibility and design. It anticipates coverage of maintenance costs by docking fees charged to private water transportation providers. Another item is independent funding

for Metrobus, Metrorail, and Commuter Rail; the plan anticipates that the equipment and operating costs of the common fare system would be covered as part of the costs for preservation of the transportation system.

Delaware's plan identifies the split between capital and operating costs in its financial estimates. It notes that capital costs made up 50 percent of the budget in 1995, while operating costs made up approximately 25 percent. The plan states that transportation operating and capital investments are closely related, and observes that ignoring the importance of traditional operating costs can lead to higher costs for capital maintenance. While *Delaware's* plan does not identify specific costs for the plan period, it states that together, capital investments and operating strategies will address mobility and access needs for the transportation system.

Other plans, such as that of *North Dakota*, group the cost items into various transportation system scenarios. These scenarios describe possible future directions the state could choose for its transportation system, and the associated costs for each, clearly demonstrating the trade-off decisions to be made between the scenarios. The plan outlines five alternative scenarios for *North Dakota's* future transportation system. These are:

Alternative 1- Continuation of Current Program

Alternative 2 – Minimum Maintenance Program

Alternative 3 – Functional Class Optimization Program (provide varying levels of maintenance and reconstruction)

Alternative 4 – Maintenance of Current Condition Program

Alternative 5 – Continuation of 1995 Funding Level Program

Within each alternative, the needs are outlined in five-year intervals, separated between construction and maintenance costs. These needs are compared against available revenue to illustrate the funding gap and the trade-off choices that must be made within each alternative scenario.

Still other state plans, such as that of *Idaho*, group the needs by categories, such as safety and transportation enhancements, as well as within modes. It also identifies backlog needs versus accruing needs. The plan states that none of the funding projections will satisfy all the identified backlog and accruing needs over the 20-year planning horizon. However, it further states that this does not make the statewide funding plan inconsequential, because the purpose of this plan is to target funding toward the more critical programs. The plan does this by showing the current backlog needs, accruing needs, proposed funding for each program, and the shortfall resulting from the designated use of funds. *Idaho's* plan acknowledges the importance of continually balancing major capital improvements with the needs to preserve the current system in a good state of repair, and to continually monitor projects.

Funding Shortfall

The state plans generally project that they will not have adequate revenue to meet long range transportation needs. Twenty-seven of the 48 plans indicate that they anticipate a funding shortfall if they intend to complete all of the projects identified over the plan period. However, of the 27 plans that identify a funding shortfall, only fourteen identify the specific amount of the shortfall, while the remaining thirteen indicate the likelihood of a funding shortage without specific estimates.

Means to Address Funding Shortfall

Eighteen of the state plans discuss potential ways to meet the funding shortfall. Most of these discussions revolve around strategies rather than projecting dollar amounts.

Funding as a Strategic Goal

Many of the plans include a specifically stated overall strategic goal to pursue stable and adequate funding. *Indiana's*, *Ohio's* and *Texas'* plans, for example, include the evaluation and identification of ways to fund the gap as a strategic goal. The means through which the plans state they are pursuing this goal differ.

Indiana's stated strategies include

- working with the Congressional delegation to increase Indiana's federal funding
- working with the state legislature
- soliciting private sector funding
- pursuing cost savings
- considering specific project return on investment analyses
- simplifying the application process for transportation funding

Texas' plan includes policies such as

- optimizing the use of existing funding sources
- maintaining the purchasing power of existing transportation revenue sources
- obtaining sufficient revenue to meet essential transportation needs
- funding special needs
- providing a transportation revenue structure that ensures cost responsibility
- increasing flexibility in the use of transportation resources

- monitoring and addressing emerging issues

These policies include actions and strategies that include:

- raising motor fuel and diesel taxes
- seeking authorization for state bonds
- giving TX DOT bonding authority
- ensuring greatest return on investment in projects
- using life-cycle costing in developing project cost estimates
- evaluating congestion pricing, emissions fees and other similar measures

These two plans, however, do not discuss specific dollar amounts projected from these activities.

Ohio's plan discusses several options for securing additional funding for the transportation system. These include

- the possibility of passing enabling legislation to expand ODOT's ability to bond projects
- taking advantage of toll bridge and toll road opportunities
- pursuing private-sector investments
- creating permanent, dedicated state funding sources for air, rail, water, and transit
- examining the benefits of a revolving loan fund
- examining the impact of tax exemptions for alternative fuels

Ohio's plan has two parts -- a "macro phase," addressing the bigger picture, and a "micro phase," addressing more details. The macro phase does associate dollar amounts with the identified actions. The micro phase, issued two years after the macro phase, contains greater analysis. The micro phase concludes that five steps are necessary to address the disparity between requested transportation investments and available revenues. These are:

1. Developing a selection process to rank the proposed project
2. Reorganizing to streamline its operations
3. Seeking innovative public/private partnerships
4. Urging Congress to return a larger portion of federal fuel taxes paid in Ohio to the state
5. Beginning dialogue with the Ohio General Assembly about how to prioritize and address the infrastructure needs in Ohio

In addition to these generalized steps, each modal area contains a discussion of ways to generate additional funding, with associated annual dollar amounts. For transit, for example, the plan states that nine factors were used to evaluate each of the nine potential funding mechanisms deemed worthwhile for in-depth consideration. The plan does not list each of these factors nor detail the rating process, but does provide a description of the three mechanisms that emerged as the most feasible. These were: a motor vehicle rental fee, for an estimated \$17.5-\$35 million per year; a motor vehicle lease-purchase fee, for an estimated \$11.9-\$29.9 million per year; and an annual excise fee on parking lot spaces, for an estimated \$187.3 million per year.

Pennsylvania's plan does not address funding the gap between costs and revenues as a stated strategic goal. However, the plan does include specific performance measures and targets to gauge its success with the stated strategic goals. These performance measures address the importance of adequate funding in achieving the other goals. Two performance measures deal directly with funding issues, providing a means to measure progress towards this end. The first performance measure addresses the number of loans closed through the Pennsylvania Infrastructure Bank's loan program, with a target of averaging six per year. The second addresses maintaining Pennsylvania's historical share of 4.5 percent or more of the annual federal transportation budget.

Other Means to Address the Funding Gap

Other state plans that do not include the pursuit of adequate and stable funding as a specific overall strategic goal still discuss how to meet the funding gap. For example, *Virginia* discusses innovative financing mechanisms while *Wyoming* discusses cost-reduction measures. The *Virginia* plan states that utilizing private sector resources to finance transportation infrastructure frees up public sector funds for other projects, whether transportation or non-transportation. Virginia has in place a Public-Private Transportation Act, which enables the state and qualifying local governments to enter into agreements with private entities to acquire, construct, improve, maintain or operate any transportation facility. Virginia's plan addresses other innovative financing measures used for specific projects, such as the U.S. Route 58 Corridor Development Program. A fund supported from an annual deposit of \$40 million of the recordation tax collected by the State Treasurer was established to finance improvements in the Corridor.

Wyoming's plan discusses several options for reducing costs to close the funding gap. It states that the limited available funds should be channeled to those projects identified as having the highest priorities, maximizing the efficiency of the transportation system in the state. It also acknowledges that some needed projects will have to be delayed because their priorities are lower.

The plan explores the possibility of increasing the "tolerable limit" on maintenance, which would allow the roads to deteriorate to a lower quality before money would be spent to improve their condition. It discusses the possibility of eliminating funding for

construction and maintenance in rest areas, or cutting back on other transportation enhancements. It also discusses altering its design standards by reducing the level of service, which could reduce safety and increase congestion in some areas, but would reduce construction costs. The plan states that, in the environment of limited funding, only those projects with the highest cost-benefit ratios should be included to maintain the efficiency of the overall system. It also states that the secondary effects of these policies should be examined closely before implementation.

The specific dollar amounts anticipated from these strategies are identified as being discussed in a separate financial plan, which was beyond the scope of this review to examine.

Noteworthy Practices

The following section briefly describes innovative practices documented in the state plans that go beyond the typical efforts outlined above. The states identified below use techniques that clearly demonstrate the importance of consideration of the financial process. These plans use a balanced approach, combining consideration of costs, revenues, funding shortfalls, and options for addressing the shortfall. These approaches combine elements of financially constrained and financially unconstrained planning, covering the transportation needs of the entire statewide system. This analysis is incorporated into the planning process to aid prioritizing and decision-making. These practices are illustrative of some approaches that may prove interesting to other states. The states listed below do not constitute an exhaustive list. There are likely to be other innovations that are beyond the scope of this review because they were not described in the plan itself.

Iowa

The **Iowa Plan** discusses each mode separately, tying major initiatives to anticipated costs, which are contrasted to estimated revenues. This approach results in a clear description of funding surplus or (in most cases) shortfall for each mode; a realistic projection of what can be accomplished for each mode within current constraints; and a target amount for additional funding to pursue to complete projects. The plan also estimates costs and available revenues for intermodal improvements and other investments such as for ITS, for clean air attainment, or for transportation enhancements.

Projects are discussed in terms of their ability to achieve the overall strategic goals of the Iowa plan. Costs for separate projects aggregate into the costs for all investments in the overall statewide transportation system.

Iowa's plan includes side boxes that discuss potential options for financing the shortfall. For example, in the highway mode, Iowa cites changing the vehicle registration fee for trucks less than five tons to the same formula as passenger cars as a potential strategy. This action could generate an additional \$20.2 million in revenues. While most of the potential strategies are not as firmly developed in terms of revenue projections, every mode does include potential funding options to explore in detail in a later financial plan. These range from securing funds from the State General Fund, additional user fees, specific trust funds, and revolving loan funds.

These overall system needs and anticipated revenues are summarized in a table that includes all transportation systems within the state. This table demonstrates that the shortfall to implement all of the action items outlined in the plan has a significant tie to timing, with the shortfall increasing with each subsequent five-year period. The statewide plan states that a financial plan will be developed to analyze each modal shortfall and determine if realignment or redirection of existing modal revenues could be a viable solution, as well as to evaluate potential new sources of revenue. Realization of the shortfall early in the twenty-year planning process will hopefully allow adequate time for the development of a financial plan to address this shortfall.

Idaho

Idaho's plan includes a very comprehensive discussion of finances in an appendix. It contains a preliminary discussion of forecast demographic trends for the state, from which it determines the potential future revenues. It identifies the perceived risks to current transportation revenue, in both general and specific terms. The general risks and issues to address are:

- Current obligational limitations on federal funds have substantially reduced the actual revenues
- Local and state-raised revenues have not kept pace with transportation needs
- The long-term impact of alternate-fuel vehicles is substantial
- Public expectations for amenities from transit services and highway projects, and governmental regulations increase overall transportation costs

In the discussions of specific funding sources, the plan identifies anticipated amounts and possible risks. This helps to make the plan more realistic. For example, the plan identifies certain Innovative Projects and Congestion Relief Projects, which currently receive federal funding. However, amounts for these programs are eliminated from the long-range revenue plan due to their less predictable and discretionary nature.

The plan then estimates anticipated revenue over the plan period. In recognition of the identified risks to revenue, Idaho's plan identifies low, medium and high estimates of required revenues. The revenues are identified by source as well as amount. These

sources go beyond federal-aid funding, also identifying highway user revenue by jurisdiction, non-user revenues, and state match for all required federal programs.

The plan also identifies the transportation funding needs. These needs are disaggregated into backlog needs and accruing needs, aiding decision-makers to select projects that contribute to the accomplishment of the plan goals and in the correct proportions to address backlog versus accruing needs.

These estimates of revenues and needs are compiled in a table detailing the anticipated total shortfall. This compilation is disaggregated according to type of program, for example roadway construction, safety projects, or aviation.

The plan provides a very good picture of the needs and required funding for Idaho's transportation system over the next twenty years. By identifying low, medium and high estimates, the plan provides a range of potential revenues, recognizing that none of the current funding sources is guaranteed. The appendix states that all estimates are preliminary only, and that needs and funding will be more fully developed through the management systems and the decisions of the Idaho Transportation Board, but this preliminary analysis provides a good starting point for that development.

Ohio

The macro, or big picture, portion of Ohio's plan identifies transportation project needs over the next twenty years. This discussion is centered on the currently available revenues and the fact that there will be a funding shortfall. The plan also discusses the need to shift funding priorities if Ohio is to fund projects that the citizens of Ohio indicated they wanted in the public outreach process, such as passenger rail and transit.

In addition to this discussion, one of Ohio's goals is:

“Funding: Seek stable revenues for the preservation and maintenance of existing facilities and services, plus the provision for new facilities and services that meet Ohio's transportation needs, and support efforts to develop new and innovative approaches to transportation planning.”

Within this goal, there are several policy statements and initiatives focused around financing. These address the need to pursue private sector investments; create financial incentives; create dedicated state funding sources for all the modes, examining the impact of alternative fuels and other innovative financing mechanisms. These initiatives are relatively detailed in terms of areas to pursue in obtaining additional funding. If some or all of these mechanisms are successful, not only would it aid Ohio to meet its transportation needs for the future, but other states might be able to replicate some of the initiatives.

The micro, or more detailed, portion of the plan provides a more detailed discussion of the state's financial needs. This was issued two years after the macro portion. It incorporates the long-range plans of all the state's Metropolitan Planning Organizations (MPOs), and the needs of the portions of the state not covered by the TEA-21 metropolitan planning requirements. The State Rural Highway System plan specifically incorporates the input of focus groups in each of the state's twelve planning districts. This regional and modal input is compiled to approximate costs for new projects. The analysis estimates the costs of both the fiscally constrained and fiscally unconstrained new capacity projects for transit and highway contained within the MPO plans. The MPO plans are compiled for individual modal plans, which in turn aggregate into a system-wide plan. Within each modal discussion, the plan addresses costs and available revenues. The plan also analyzes potential additional funding sources, beginning with a broad range of options that are decreased to a few most feasible options.

The overall analysis leads to the conclusion that Ohio's transportation needs far exceed available resources. Until additional funding is obtained, Ohio is placing a higher priority on system preservation than new construction. This leads to a much smaller highway expansion program than predicted two years earlier in the macro portion of the plan. The ability to make these trade-off decisions is a benefit of the detailed financial analysis conducted in Ohio's micro plan.

Washington

Washington's twenty-year transportation plan addresses finances for each mode and for the system. This includes revenues, expenses, and funding shortfall. Two comprehensive tables detail needs and revenues for each mode and address the proposed source for increased revenue in the areas where further revenue is needed.

Washington's plan states that the actions it contains are financially constrained. In the individual modal discussions, each recommended project has an associated total cost amount, as well as the amount the plan proposes to fund. This demonstrates the results of the prioritization process that has occurred within the transportation planning process, although the actual analysis is not presented. It provides a good demonstration of the trade-offs that must be made in a fiscally constrained environment. While the approach is not exactly similar for each mode, making comparisons across the modes somewhat difficult, it is evident from the results presented that this thought process has taken place within each of the modes, and that the results have been rolled forward into the system-wide table.

The proposed sources for additional funds are almost entirely state funds, since, in a survey of over 7,000 Washingtonians, 76 percent support either fully funding the plan or pegging transportation investment to pace with inflation and growth through increased taxes. Thus, the plan anticipates an additional tax to generate the needed revenues. This demonstrates the commitment of Washington's citizens to fund the transportation system.

III. Freight Transportation

All 48 of the long-range statewide transportation plans address freight transportation. The transportation system is essential to the movement of goods throughout the country, and the plans reflect this. The U.S. DOT's Strategic Plan notes that, "the U.S. transportation system carries...3.7 trillion ton miles of domestic freight generated by about 270 million people, 6.7 million business establishments, and 88 thousand units of government." Freight movement is essential to the country's economy, and planning for freight is, appropriately, a vital part of the transportation planning process.

The plans address freight transportation in different ways. The following discussion provides some examples from plans to illustrate some of the more common methods used to address freight transportation. Forty-five of the plans, or 94 percent, include it as one of the specific performance goals addressed. However, only four of the plans, or eight percent, explicitly identify it as one of the major issues to address over the course of the plan period. Those four plans, *Vermont*, *South Dakota*, *Kentucky* and *Delaware*, specifically identify the decline in freight rail transportation as a concern. Twenty-eight of the plans reviewed, or just over half, cite meeting the changing needs of people and industry as a major challenge; many plans include freight transportation in response to this challenge. Thus, it is evident that the level of importance assigned to freight transportation varied, as did the degree of detail used and the modes addressed.

Integration with Passenger Needs

The state plans that address meeting the needs of people and industry together are often the plans that integrate both passenger and freight transportation needs. Other plans address passenger and freight needs as two separate issues. Twenty-two, or almost half, of the 48 plans, integrate the two areas. This allows a more comprehensive view of the transportation system, with recognition of the interconnected nature of the movement of people and goods.

For example, *Wyoming's* plan identifies the challenge of meeting the changing needs of both people and industry. In its discussion of each mode, both passenger and freight issues are considered simultaneously. Within the highway discussion, an observed trend is that:

"The economic prosperity of the state is linked to the existence of the highway network. The economic character of Wyoming has its basis in agriculture, industry, mining, recreation and tourism. Access and mobility are vital to the production and distribution of mineral resources, agricultural products and industrial goods. Recreation and tourism are extremely dependent upon access to resort areas, national parks and forests, historic sites, and scenic attractions. In addition, public services such as police and fire protection, mail delivery, medical

health facilities, and public education are readily accessible to the state's residents by means of the highway network."

This integrated philosophy is reflected in the actions proposed over the plan period. Although many of the actions are designed for passenger improvement, the plan specifically mentions improvements needed on I-80, which plays a critical link in national freight movement between Chicago and Los Angeles. This philosophy is also reflected in the discussion of the other modes of transportation.

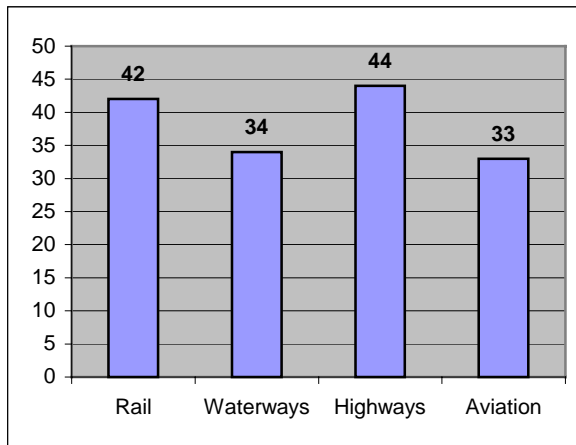
Wisconsin's is another plan that integrates passenger and freight transportation issues. One of its stated fundamental values is that "Mobility -- moving people and products from point A to point B -- is, in essence, the basic definition of transportation." This value is reflected throughout the plan. Although the plan discusses separate freight and passenger transportation plans, with specific modal projections within each, the long-range plan considers the combined impacts of the freight and passenger plans. One of its stated next steps is to develop multimodal corridor plans that illustrate how several modes of transportation work together to meet total mobility needs.

Modes Addressed

As shown in [Figure 1](#), below, the plans address freight transportation for four modes: rail, waterways, highways, and aviation. While all of the plans address freight transportation, all plans do not specify the actions planned within particular modes. The greatest number of plans, 44 or 92 percent, address the freight aspects of highway transportation. The next most common, with 42 or 88 percent, is rail. Aviation and waterways are the least common modes addressed. Waterways are not a mode that is common to all states. Air cargo has taken on increased importance in the economies of many states with the rise in "just-in-time delivery;" this was acknowledged in 33 of the 48 plans, or 69 percent.

South Dakota's plan notes the state's agricultural nature. Due to the high degree of agricultural production, the plan indicates a need for both rail and highway freight transportation. To accommodate this freight flow, the state designates a Preferential Truck Network, which has wide shoulders, flatter grades, better sight distance and stronger pavements, all of which aid in the transport of trucks carrying heavy agricultural loads. The state also works to improve and rehabilitate those Federal-aid Secondary Roads that provide access to grain elevators with unit train loading capacity, to facilitate rail transportation.

Figure 1: Modes in which Freight Transportation is Addressed



Maine's plan addresses four freight transportation modes – rail, marine, highway, and aviation. The state invests extensive effort in freight planning and has developed an Integrated Freight Plan (IFP), which is intended to:

- inventory the current freight network
- identify both major and minor shortcomings of the current transportation network
- determine a methodology for assessing project benefits weighted against costs
- develop a policy for addressing potential public-private investments
- target projects

The IFP incorporates input from interviews with selected individuals representing business, economic development, special interests and state and local government. It also collects large-scale data to sample major freight producers and transportation providers. This input is used to develop recommendations for the direction to proceed in for each. For highways, one recommendation is to invest in intelligent transportation systems to improve the efficiency of roadside commercial vehicle enforcement while reducing shipper delays through more efficient screening processes. For railways, the state is looking for projects to increase competition and inter-connectivity, as well as preserving rail corridors and eliminating deficient clearances for future use. Bangor International Airport is to be marketed as a regional air freight facility for northern and eastern Maine, to accommodate the anticipated increase in this mode for freight transportation. Cargo port development will focus on establishing public-private projects, and on securing container feeder services at all major ports with improved intermodal connections at each port.

Noteworthy Practices

The following state plans demonstrate some noteworthy practices in freight transportation planning. These plans describe a thorough and detailed analysis of the existing freight traffic, and forecast future trends in freight transportation. Using these anticipated trends and the knowledge of the existing situation, these plans often combine the needs for goods and passenger movements with the need for passenger movement to establish a long-range transportation plan that incorporates both essential aspects of the transportation system. There are many innovations taking place in freight transportation planning; the states listed below do not constitute an exhaustive list. There are likely to be other innovations that are beyond the scope of this review because they were not described in the plans. These practices illustrate approaches that may prove interesting to other states.

Missouri

Missouri's long-range statewide transportation plan includes a Freight Flow Summary. The plan states that in considering freight movement in Missouri, it is important to understand how freight moves in and out of the state, freight corridors, and the relationship of freight to other modes. The analysis in the Freight Flow Summary quantifies domestic freight tonnage in, through, and out of Missouri by mode. It also analyzes the regional freight flow based on commodity.

In quantifying the domestic freight tonnage moving throughout Missouri, the analysis divides the U.S. into thirteen geographic regions associated with the specific corridors on which goods move in and out of Missouri. Freight movements to and from these regions are considered in terms of tonnage, commodity, and mode of travel. This analysis shows that the largest tonnage of outbound freight goes to the I-55 South region, and that this traffic travels largely on water, over the Mississippi River. In general, however, the majority of the freight traveling both into and out of Missouri is transported on rail lines. Trucks are used to transport goods to some of the destinations closer to Missouri, although goods originating in the Southwest, Northeast and Southeast regions also rely heavily on truck transportation.

The analysis also considers freight that moves through Missouri, without originating or terminating there. The top three commodities found to be moving through by truck were warehouse and distribution commodities, rail intermodal drayage, and ready-mix concrete. Freight shipments within the state are also examined, although movements originating and terminating in the same county are not included in the analysis.

The compilation of all of this information allows the plan to identify major freight zones and corridors, by mode. This allows the state to determine the relative importance of

each mode to the economy of the state. The breakdown by ton-miles allows an estimate of overall use of a particular corridor, while the breakdown by commodity allows an estimate of the value of the goods transported over a particular corridor. This helps the state to assign priority to the future development of these zones and corridors, based on their importance to the economy of the state.

Colorado

The **Colorado Plan** recognizes freight as a driving force in the state's economy, and reflects more extensive freight planning efforts than in the previous 1996 plan. The plan notes that this increased focus on freight in planning, programming, and project implementation is consistent with U.S. DOT's initiatives in ISTEA and TEA-21; the National Highway System Designation Act; creation of the Federal Motor Carriers Safety Administration; and the National Freight Transportation Policy Statement and Guiding Principles.

In response to these federal requirements, and in an effort to update the 1996 plan, Colorado has undertaken several freight-oriented studies. Among these are the Western Transportation Trade Study, the draft Colorado Rail Needs Study, and the draft Freight Infrastructure Study (FIS). Of these studies, the FIS is discussed in the most depth in the plan. It allows the state to collect data on freight movement, issues, concerns and potential projects related to freight movement throughout the state in 1998 and 1999. This is largely trucking oriented, since the rail needs are covered in the Rail Needs Study. The draft FIS results were provided to the Transportation Planning Regions in time to be incorporated into their regional plans.

The statewide plan incorporates the findings from the above plans as well as the recommendations of the regional transportation plans. In general, the plans support system safety, mobility, and the quality of the transportation system for freight-haulers and shippers, along with the traveling public.

For the FIS, the state conducts interviews with stakeholders such as shippers, carriers, haulers, quasi-governmental agencies and other freight representatives. Based on these stakeholder interviews, the state identifies an initial list of potential projects. Similar stakeholder information was collected for the Western Transportation Trade Study and the Rail Needs Study.

In the spring of 2000, the state conducted a Statewide Customer Telephone Survey that included two freight industry focus groups. The focus group participants corroborated the FIS findings. Congestion and road concerns were the concerns cited most frequently. Other concerns included:

- Competitive rail rates
- Freight/passenger rail issues
- High taxes and fees
- Increase allowable loads
- Increase overpass/tunnel heights
- Maintenance
- More reliable rail service
- Poor highway pavement/bridge conditions
- Poor snow and ice removal
- Rail abandonment
- Stricter emissions controls
- Support local vs. out-of-state companies
- Truck/railroad whistle noise

These concerns are combined with the assessment of the current state of the freight network to identify projects to include in the Statewide Transportation Improvement Plan (STIP), along with the necessary level of performance of this network. To measure attainment of the desired condition of the highways, rail lines, intermodal facilities and the aviation industry, the state develops performance indicators. These performance indicators are not specified in the plan, but future determination of levels of performance and a means to measure progress will aid the state in determining future development priorities.

The plan discusses the current status of the freight transportation modes; the anticipated needs for each mode based on the identified concerns; and the steps that would be needed to address the anticipated needs. Major shippers in each lane are identified in the plan, along with major commodities shipped. The plan also distinguishes these concerns in terms of their importance to each of three geographic regions of the state.

These regional transportation plans, along with the FIS and other transportation plans for metropolitan regions are intended to be the sources of projects ultimately included in the STIP. Colorado's statewide transportation plan includes appendices that contain lists of all proposed projects, both financially constrained and unconstrained. The freight needs are considered in depth, both from the statewide and regional perspectives. The result is a more comprehensive and coordinated overall plan.

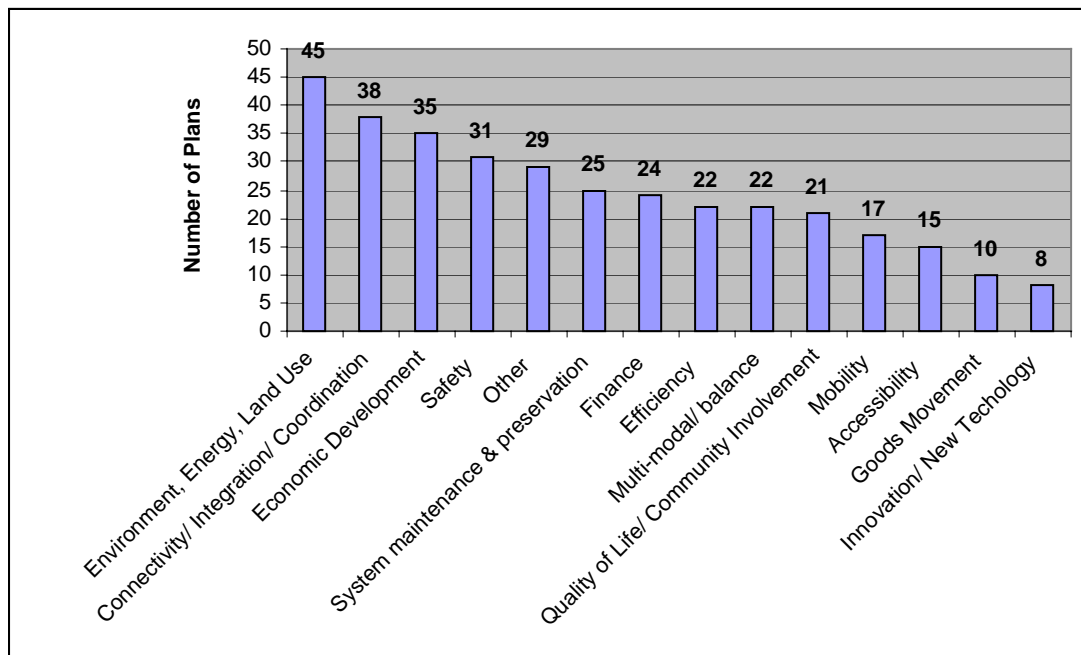
IV. Goals and Performance Measures

Both TEA-21 and its predecessor, ISTEA, identify specific factors that must be considered in the planning process, but the manner in which they are to be addressed is left to states and metropolitan areas. All but one of the statewide transportation plans address specific goals to be achieved through the planning process. The majority of these goals are applied across the plan, while four of the plans (*Kansas, Missouri, Washington and West Virginia*) have goals that are specific within each mode rather than having overarching goals.

Goals

There is a wide variety in the topics addressed by the goals in the plans reviewed, as illustrated by [Figure 1](#), below. Certain state plans, such as those of *Maine* and *Iowa*, focus on a relatively small number of goals, while other plans, such as those of *Alaska, Vermont*, and *Nevada* have many goals they are seeking to address.

Figure 1: Goals Addressed in Statewide Transportation Plans²

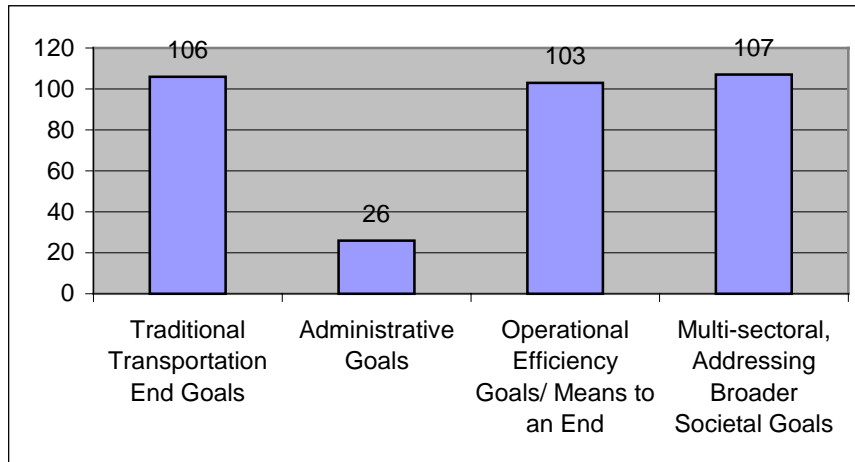


Despite the diversity in individually named goals, certain broad categories can be used to group these goals. Goals, such as safety, accessibility or mobility, are traditional transportation goals, and represent a desired end state. Other goals, such as efficiency or

² Most plans had multiple goals; thus the number of stated goals is more than the 48 plans reviewed.

effectiveness, represent a means to an end, or a better way to achieve desired end states. Still others, such as adequate finance, fall into an administrative category, representing tools that are needed to reach the desired end states. Finally, there are those goals that address broader societal concerns such as economic development or quality of life, in which transportation plays a role but may not be the sole contributing factor. The range in types of goals is presented in [Figure 2](#).

Figure 2: Types of Goals



The most common goal the plans address is Economic Development. Thirty-five of the 48 plans state that economic development is something the plans strive to address. This is addressed in different ways in different plans. For example, *Oregon's* plan divides its economic development goals into five action areas:

- Balanced and efficient freight system
- Linkages to markets
- Expanding system capacity
- Intermodal hubs
- Tourism

These action items are interwoven throughout the plan in ways that support economic development throughout the state. *North Carolina's* plan also has economic development as a goal. It lists three objectives that will help to attain the goal, with strategies and performance measures underlying each one. These objectives are to:

1. Reduce congestion and travel time throughout the transportation system.
2. Provide facilities to improve the economic potential of all areas of the State.
3. Improve personal mobility and access to transportation.

Within each objective, the plan highlights how the specific activities to be undertaken by each mode and division or branch of the transportation department will help in achieving this goal.

Many of the state plans also discuss current economic conditions in the overview of the current situation in the state. For example, *Pennsylvania* discusses the changing economic situation in the state, which has decreased its reliance on steel mills, agriculture, and other industrial activities. It acknowledges that the question of how to best keep Pennsylvania's economy aligned with a rapidly changing, global business environment is one with which the state is struggling. Moreover, it acknowledges that the answers to that question will have an impact on the state's transportation system; transportation decisions made without consideration of that question may have harmful effects on the state's economy. This discussion adds depth and context to goals for economic development.

The second most common goal addressed is safety. Thirty-one of the 48 plans reviewed, or 65 percent, include safety as one of the primary goals addressed by the plan. This is addressed in many ways. *New Mexico's* plan, for example, states that one of the recommendations to emerge from its public involvement sessions is to consider traffic safety and access, particularly that of children bused to schools in rural communities, when establishing priorities. This specific recommendation is addressed within the broader goal of achieving a safer transportation system through continuous reduction in motor vehicle crash deaths and injuries. While *New Mexico's* plan is focused primarily on roads, *New York's* plan addresses the importance of safety across many different modes. Its goal is to reduce the loss of life, health and property through natural disasters or transportation accidents, crimes, and acts of terrorism committed on transportation properties. Within this goal, the plan specifically addresses aspects of safety in:

- ITS projects
- Modifying driving behavior
- Educating adults and children on walking and biking safety
- Improving the safety of public transportation
- The security of transportation facilities

Safety is also addressed as a major goal in each of the MPO plans summarized in *New York's* long-range plan, which demonstrates the commitment to safety at all levels of transportation planning in the state, and close coordination between state and metropolitan plans.

The spectrum of goals addressed is quite diverse across the plans. In an environment of limited transportation dollars, it is not surprising that 25 of the 48 plans reviewed, or 52 percent, state that it is important to preserve and maintain the existing transportation

system and infrastructure. Consistent with the focus of ISTEA and TEA-21 on coordination and integration, 38 of the 48 plans, or 79 percent, emphasize these aspects of the transportation system. Within the “other” category, there are certain goals that are worth noting for their distinctiveness. *Virginia’s* plan lists privatization as a goal. The plan states that the public-private approach suggested is intended to supplement – not supplant – public efforts in transportation. The plan suggests that maximizing private sector involvement in infrastructure development results in an expanded transportation pie, freeing up public sector funds for other projects. *Virginia’s* plan states that it is advocating certain actions, such as enactment of specific legislation, to facilitate this process. Three of the plans, those of *Georgia*, *Pennsylvania*, and *Louisiana*, list transportation equity as being among their primary goals. In *Georgia*, the plan states that aged and physically challenged populations may become increasingly dependent on public transportation for mobility, and that the state needs to plan to address these needs. *Louisiana’s* plan includes equity amongst goals for balance and integration, stating an objective to promote a balanced spatial distribution of activity and equitable opportunities for all groups.

Performance Measures

Of the 48 plans, twelve include specific performance measures. These performance measures are used to measure progress toward reaching the stated goals of the plan. Some of the plans, such as *Vermont’s*, discuss the need to develop performance measures to gauge the level of success in meeting the plan’s goals. Other plans, such as *Tennessee’s*, describe the basic criteria by which the effectiveness of their transportation programs will be measured. For *Tennessee*, these are:

1. the structural integrity of system facilities and/or equipment,
2. the operating condition and/or accessibility of the system, and
3. the safety of the system.

Other state plans, such as *Nevada’s*, have performance measures within each stated goal. For example, *Nevada’s* plan states that it will use the carbon monoxide state standard and the particulate matter state standard to measure its achievement of the goal of protecting and enhancing the environment.

In the twelve plans that include performance measures, most are measures of output, reflecting quantifiable objectives. Three plans, those of *the District of Columbia*, *Delaware*, and *Oregon*, contain some form of outcome goals, or more performance and results-oriented goals. *Delaware’s* plan includes a discussion of “the situation now” and, in contrast, “the situation you will see in 2020 as a result of this plan.” Thus, the plan includes results-oriented outcome measures. *Oregon* and the *District of Columbia* include a mix of types of measures, reflecting both quantitative and qualitative results.

Noteworthy Practices

The following section briefly describes some state plans that have carried the process of setting up goals, objectives and performance measures to its furthest extent. Practices documented in the state plans go beyond the more typical efforts outlined above. The states identified below incorporate many aspects of the planning process in development of their goals and objectives. They also provide clear yardsticks by which to measure progress toward those goals, introducing accountability into the planning process. There are many innovations taking place in the development of goals and objectives; the states listed below do not constitute an exhaustive list. There are likely to be other innovations that are beyond the scope of this review because they were not described in the plan itself. These practices illustrate approaches that may prove interesting to other states.

Pennsylvania

The foundation of the **Pennsylvania Plan** is its strong vision. Its goals and objectives result from a comprehensive visioning exercise involving numerous stakeholders. The goals and objectives reflect both the current situation and the results of the visioning exercises.

The goals and objectives in the Pennsylvania plan are intended to bring the state to the preferred future situation identified in the plan. The vision and overall plan reflect themes of:

- Mobility Options
- Voices
- Efficiency
- Environment
- Equity
- Economy
- Safety

These themes are captured as the acronym: Penn MOVES.

The themes are disaggregated into goals, objectives, performance measures, and targets. The plan includes a series of matrices that clearly illustrate how each goal supports the themes and how the objectives support each goal. Many of the objectives meet several goals at once, demonstrating the crosscutting nature of the plan and its goals.

Finally, each objective is associated with one or more performance measures with which to gauge success in meeting the goals. The plan also lists targets for each of the performance measures, defining what will be deemed a success for this particular

measure. For example, the objective to reduce the number of fatalities and severity of crashes on the state's highways serves to meet goals that include to:

- Promote the safety of the highway system
- Maintain, upgrade, and improve the transportation system
- Inform and involve the public and improve customer service

There are several performance measures for this objective. Among these are the number of injuries overall, the number of fatalities overall, and subdivisions within the fatalities category. The targets for these are to reduce the fatalities across all categories by 10 percent by 2002, 15 percent by 2004, 20 percent by 2008, and 40 percent by 2020.

By using performance measures the Pennsylvania plan introduces accountability into the planning process. Although the plan does not describe a specific monitoring process, it still provides a means to determine whether its goals are reached. If the targets are not being attained, the state is able to either adjust its targets to a more realistic level or to develop additional objectives and actions to help meet the goal.

Nevada

Nevada's plan has six major policy goals:

- Mobility and Accessibility
- Safety
- Environmental
- Efficiency and Effectiveness
- Technology
- Economic Development-Diversification

Each goal has associated strategies and performance measures. These goals, performance measures and strategies are summarized in a table in the plan. Many of the strategies are for specific actions to be taken to achieve the stated goal. For example, strategies to meet the mobility and accessibility goal include: continuing to implement the "Silver State Management Programs," which address the highway, bridge, maintenance, and safety needs of the system; and completing and implementing the Nevada State Transit Plan, the Statewide Bicycle and Pedestrian Plan, and the Nevada State Rail Plan.

The performance measures used to gauge the characteristics of the transportation system are varied. Although the Nevada plan does not identify target levels to be reached within the performance measures, it identifies the measuring stick to be used. It also presents past trends in many of the performance measure areas, which provide decision-makers with reasonable targets on which to aim. Within the discussion of the technology goal,

the plan presents the percent change in urban road congestion from 1990 to 1998. To track changes in technological advances and their effect on the state transportation system, the plan proposes monitoring reduction in the number of congested urban highways, or those highways that are operating at 80 percent or more of their capacity. The plan presents the forecast urban growth rate as well as the historic congestion levels. Taken in combination, these two factors should permit decision-makers to determine an appropriate target level. Neither the process used in determining the target nor the target level itself are detailed in the plan, however.

V. Major Issues and Challenges

The identification of the major issues and challenges a state expects to face over the plan period sets the context and can form the essential framework for the long-range plan. A thorough identification of the future challenges, and what this implies for the transportation system, can help shape the future vision for the transportation system. Clear description of challenges, and credible links to transportation choices are essential to engage elected officials and the public, and establish the plan as a significant document for decision-making.

In some manner, all 48 of the plans discuss the major issues and challenges facing the state over the next twenty years. The terms “issues” and “challenges” are in many cases used interchangeably in the statewide transportation plans. However, “challenges” generally refer to a perceived difficulty that must be overcome, while “issues” refer to items that are perceived to play a large role in the future transportation system, independent of level of difficulty. While a wide variety of challenges are identified, they can be grouped into four broad categories:

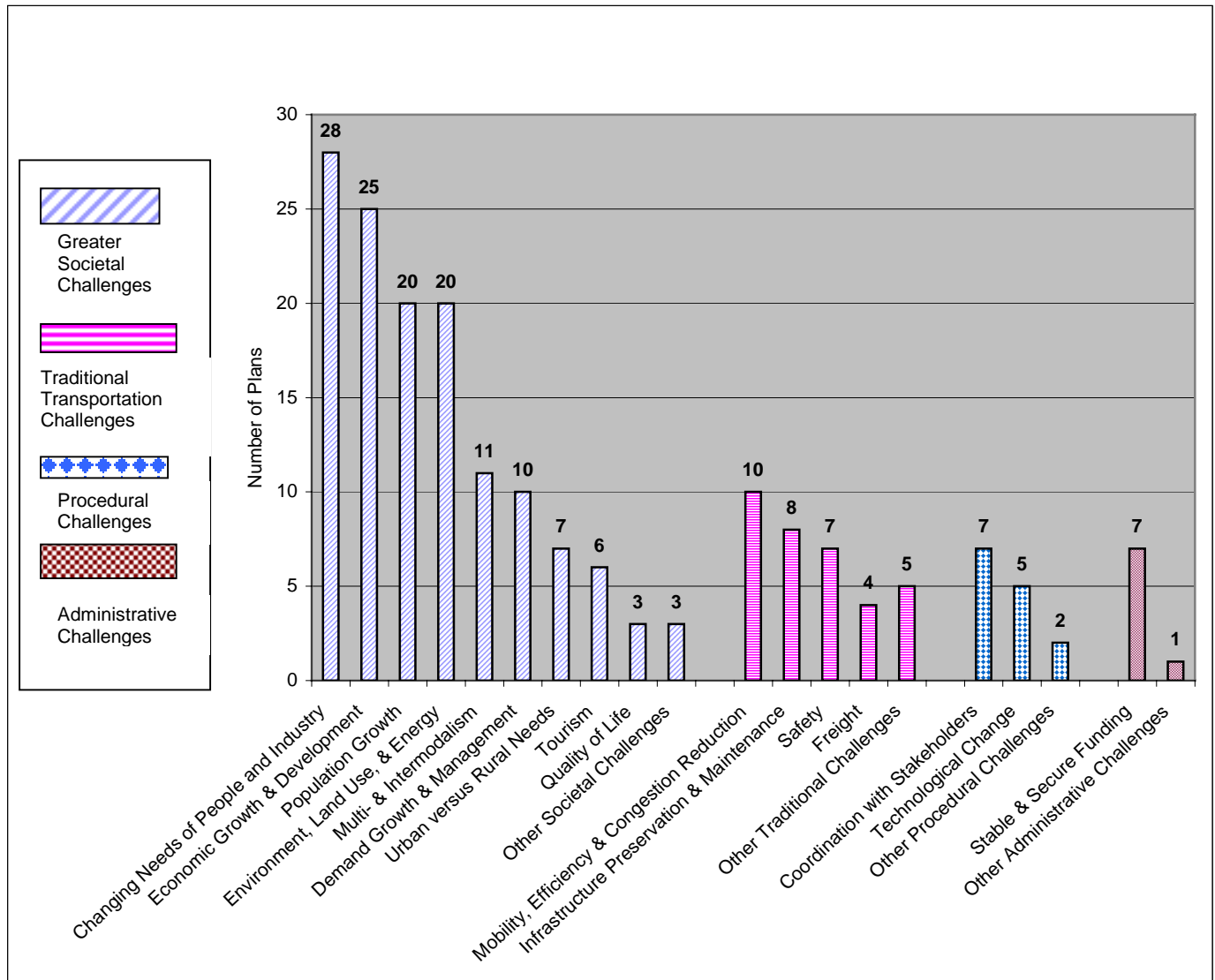
- **Traditional Transportation Challenges:** typically associated with the transportation system, such as traffic congestion reduction or safety.
- **Administrative Challenges:** institutional or operational concerns faced by the entities implementing the plan, such as funding shortfalls, or organizational roles and responsibilities.
- **Procedural Challenges:** related to the process of implementing the transportation plan in an efficient and effective manner, such as difficulties in coordination among the various entities, approval of critical agreements or documents (Plan, TIP, MOUs).
- **Greater Societal Challenges:** faced by the greater society such as environmental concerns (air and water pollution, climate change), quality of life issues, along with general challenges associated with population and economic growth, and shifts in land use. Along with being significantly impacted by these challenges, transportation also can have an influence on these concerns.

These categories are similar to those used in grouping the performance goals and measures. However, as opposed to the performance goals, which were evenly distributed in all categories except administrative, the major issues and challenges identified by states in their plans are predominantly in the category of greater societal challenges. These categories, and the specific challenges identified within each category, are shown in [Figure 1](#).

Almost all 48 of the plans reviewed foresee funding shortfalls over the plan period. However, the plans reviewed cited only eight administrative challenges, which include

funding issues, as major challenges. The focus of the challenges cited is on factors that are impacted by the transportation system in an indirect manner, rather than on factors that are solely determined by transportation.

Figure 1: Categories of Major Issues and Challenges



The majority of plans reviewed, 44 of 48, or 92 percent, use analysis of demographic or socioeconomic trends to identify challenges. This helps to explain why so many issues are in the category of greater societal challenges. The remaining four plans either did not specify how they identify the issues described, or use public involvement to identify the issues. Some states specifically discuss statewide conditions that affect transportation

needs. For example, the *North Dakota* section entitled, “Conditions that Affect Transportation Needs” covers political subdivisions, physical conditions, population characteristics, and economic conditions. The plan connects these issues directly with transportation needs. For example, the cold climate increases the maintenance requirements and costs for the transportation system. Also, the aging and shrinking of the rural populations affect distances to travel for basic services and increase the demand for transit to serve elderly citizens.

Other plans discuss overall situations facing each state, and place transportation needs into a broader context. For example, *Colorado’s* plan discusses the statewide and environmental context overall, and ways in which this will impact transportation needs. This portrait covers such considerations as the average annual population growth, the aging of the population, labor, and economic growth. The plan groups these issues by geographical region and discusses specific transportation impacts.

Major Issues Identified

During transportation planning, it is important to understand the socioeconomic and demographic characteristics of a state. These characteristics will have an impact on the future transportation needs and in turn be affected by the transportation system. The state plans recognize that the transportation system does not exist in a vacuum; this is demonstrated because the majority of issues identified fall under the heading of greater societal challenges.

Of the issues identified from this demographic and socioeconomic analysis, some were universal, while others were very specific to the state, as shown by [Figure 1](#). For example, economic growth and development and population growth were very common issues identified. However, some states identified population growth as affecting the entire state, while others felt that population growth was only an issue in certain select areas of the state. Additionally, some state plans identify issues that were more specific to that state, such as *South Dakota*, which identified access to health care as an important issue given the rural nature of the state.

Changing Needs of People and Industry

The changing needs of people and industry were the challenges most frequently cited in the state plans reviewed. Twenty-eight of the 48 plans reviewed, or 58 percent, identify this as a major challenge over the next twenty years. This category includes not only the changing needs of the population, such as aging, but also changes in employment patterns. Eight of the 48 plans specifically mention aging as an issue to be addressed, requiring additional services such as increased transit services for the elderly. Another item included within the changing needs of the population is changes in travel patterns. *Ohio* notes that although its population has not grown significantly, the number of trips

per day has. This is due in part to the decreasing average household size and changes in development patterns attributable to the modern suburbs. Suburbs, which are typically not clustered around central shopping districts convenient for one-stop shopping, are relatively inaccessible by walking or biking. In combination, these factors contribute to increased automobile trips and vehicle miles traveled.

Discussions of changes in employment patterns and related travel involve more than shifts in the industrial base, which is usually included in the discussion of economic development. Instead, this refers to the increase in suburb-to-suburb commute patterns rather than the more traditional hub-and-spoke commute pattern, and an increase in telecommuting. For example, *North Dakota* notes that in addition to changes in the industrial concentration of employment, there has also been a considerable geographic redistribution. Rural counties have shown a decline in employment, while larger urban areas show the largest increases. Similarly, *Minnesota* notes that the majority of its employment activity is currently concentrated in the Twin Cities Metro Area, but that the greatest future growth is anticipated to occur outside its central counties, demonstrating a more dispersed pattern of employment with different transportation needs.

Economic Growth and Development

Economic growth and development is the second most common item addressed specifically as a challenge, and is closely related to the changing needs discussed above. Responses in the plans to this challenge are couched in many different ways, from attracting new business to using the transportation system to aid in managing growth and directing businesses to certain locations to facilitate freight flows and aid economic growth. *Colorado's* plan notes that the mining industry in the state has declined, while the service industry and retail trade have increased, which has a significant impact on transportation needs. Other states, such as *Vermont*, note that economic growth is a positive thing, but that it places additional requirements on the transportation infrastructure, which must be accommodated. Still other states, such as *Arizona*, take a broader view of the economic outlook, evaluating indicators such as population, employment, income, inflation and retail sales. While population growth is often identified as a separate issue or challenge, Arizona's plan indicates that it is directly linked to economic growth.

Many state plans recognize competitiveness in national and international economies as important from a transportation perspective. The NAFTA treaty is identified by many of the state plans reviewed as a major event that could impact the economies of the states. Border states in particular, such as *Texas* or *California*, are planning for the impact of NAFTA. These plans indicate that NAFTA will increase trade and lower tariffs. The potential for some job loss in specific sectors or communities is recognized, but the net job change is indicated to be strongly positive.

Many states also discuss taking advantage of their geographic position to capture more trade. For example, *Arizona* sees as an opportunity to create hub airports after noting its proximity to Mexico and California, and the increased airport congestion facing that state.

Population Growth and Environmental, Energy and Land Use Issues

Population growth is tied with environmental and land use issues as the third most frequently mentioned challenge facing states over the plan period. Twenty state plans, or 42 percent, cite each of these issues. While these are two distinct issue areas, some of the state plans acknowledge the link between population growth and environmental and land use issues, in addition to noting the pure transportation impacts. For example, *Colorado* notes that growing rates of urban and industrial development, a highly mobile public, and changing agricultural practices are altering the environment for many threatened and endangered species. It plans to focus its development efforts towards preserving entire ecosystems, rather than protecting a single species and its habitat.

Population growth alone is a challenge that is anticipated in many states. *Wisconsin* anticipates a thirteen percent growth over the plan period. This will create additional demand on existing transportation facilities, along with requiring additional services. This need for services will be compounded by the fact that both its elderly and working age populations will be increasing, with their separate transportation needs.

Environmental and land use challenges receive considerable attention in the statewide plans. Meeting Clean Air Act requirements is an important consideration in many of the plans reviewed, especially for those in non-attainment status. *Maine's* plan notes that transportation generally affects categories of air pollution – specifically ground level ozone and particulate matter. Parts of Maine are in non-attainment status for these pollutants, and MDOT has made an effort to encourage the general population to change its driving habits from single occupant vehicles to other modes. The plan outlines several additional measures underway to increase this effort. These include:

- Waterfront studies to identify interim and long term infrastructure needs for the Marine Highway
- The consolidation of terminals on the Portland waterfront
- A study by the Marine Maritime Academy to evaluate impacts of high speed ferries
- A Memorandum of Understanding between the MDOT, Acadia National Park, and interested groups to reduce congestion in the Park
- Implementation of ITS technology, beginning with Acadia National Park
- A study of ways to link the Jetport, transit providers, and key locations in Portland

The plan also notes that the MPO plans must conform to the State Implementation Plan for Air Quality, but that the MPOs do not encompass all the non-attainment areas, making the state responsible for those areas.

Minnesota's plan also discusses the measures underway to protect the environment and mitigate the social and environmental effects of transportation programs. It has developed guidance to implement environmental justice in response to the Federal Executive Order. Although this guidance was in draft form, the plan states that it has been incorporated into its public involvement policies.

Minnesota's plan references another document in draft form, *Driving Minnesota*, which outlines a set of goals and objectives for the continued preservation, restoration and enhancement of the environment and for creating pleasing roadway experiences. The objectives of *Driving Minnesota* are to:

- Preserve and enhance the right-of-way along corridors with projects that connect significant cultural and natural resources or features.
- Preserve and construct amenities along corridors to provide clarity, pleasure and consistency in a traveler's experience along the route.
- Work with community groups and state and local government units to enhance public participation and response to the values of citizens.

Other Issues

There are several other issues and challenges cited in the plans reviewed. Many of these are related to the issues discussed above. For example, growth management is related closely to both population growth and to changing employment patterns. Other issues are addressed in other modules of this review, and so are not addressed here. These include multi- and intermodalism, freight, safety, finance and coordination with stakeholders. It is interesting to note that only seven plans identified safety as a major challenge to be addressed, although all but two of the plans addressed safety. Similarly, stable and secure funding is identified as a major challenge for only seven state plans, but only two of the plans describe funding as adequate to achieve the goals of the plan.

Other identified challenges might be considered as indirect means to address funding gaps. For example, five plans address technological challenges, and seven address the need to preserve and maintain the existing transportation infrastructure. In an environment of limited funding, preserving the existing transportation system in a state of good repair is often seen to make the greatest fiscal sense and provide the most value to the traveling public. Technological factors are also often seen as a way to stretch transportation dollars. *Colorado's* plan, for example, combines the two issues in its statement that Intelligent Transportation Systems (ITS) is a management tool that can help maximize existing facilities by enhancing the mobility and safety of the motoring public.

Noteworthy Practices

The following section briefly describes some state plans that exhibit innovative approaches to the identification of major issues and challenges to be faced over the plan period. The identified issues and challenges form an integral part of these plans, constituting the underlying backbone for all actions. The plans address the means of overcoming these issues and challenges to achieve the preferred future transportation system. Thus, the actions outlined in the plan have a connection to the needs of the state transportation system. The challenges extend beyond the transportation system. There are many innovations taking place in this area; the states listed below do not constitute an exhaustive list. There are likely to be other innovations that are beyond the scope of this review because they were not described in the plans. These practices illustrate approaches that may prove interesting to other states.

Arizona

The discussion of major issues and challenges in the Arizona plan demonstrate the interconnected nature of economic and transportation futures. These futures are grouped into three time periods: short-term (one to three years), mid-term (three to five years) and long-term (five to twenty years). Items included in this discussion are:

- Population
- Employment
- Income
- Inflation
- Retail Sales

In the short-term, the major issues anticipated are population and employment growth, coupled with growth in personal income and retail sales. Arizona's population growth was seventh among the 50 states between 1990 and 1993, and its employment growth was tenth in 1993. Arizona does not expect these strong rates to continue, but does expect to continue to experience considerable growth. In the mid-term, in addition to population growth, the biggest factor seen as impacting the economy is foreign trade, particularly with Mexico and Canada. In the long-term, population growth will continue to play an important role. Additionally, the state expects to be affected by a number of internal and external factors, including national business and defense restructuring, globalization, and changes in industry.

Following identification of these issues, the plan discusses variables that will affect the state over the next 25 to 50 years, demonstrating an even longer-term view by those attempting to shape this future through the transportation system. The plan states that transportation needs and the transportation systems designed to accommodate these needs

are closely linked to energy and technological factors, and expects that these factors will influence changes in alternative modes of travel.

The plan concludes that technology will have a significant influence on the future of the transportation system, as well as on employment patterns. The plan cites telecommunications in particular as having a bearing on the future transportation system, and refers to a “communication/transportation trade-off” -- that communications improvements, especially telecommunications, are likely to change travel patterns and thus transportation needs. Some of the possible scenarios involve telecommuting and home-based businesses, commuting to intermediate locations, or part-time teleworkers. Regardless of which scenario proves true, commuter patterns will be significantly impacted.

The plan acknowledges that the automobile currently dominates passenger transportation and does not expect this to change. The plan anticipates that the ability of the automobile to offer transportation when flow densities are low and travel patterns are diffuse will continue to make it the mode of choice, given the dispersion of Arizona’s population. However, the plan states that non-motorized modes, such as bicycling and walking, will play a larger role as metropolitan growth brings continuing traffic congestion and air quality concerns.

The plan expects growing congestion of roads and airports to increase the importance of railways for passenger transportation and freight transportation. The plan anticipates the possibility of developing a western air hub, as other airports reach capacity. The state sees itself as well positioned to take advantage of this situation due to its excellent weather and relative geographic proximity to the western states, and is including these elements in its vision of the future.

The future transportation system will be built on the present system. Thus, the plan states that the first priority for investment is preservation and maintenance of the existing system, and the second priority is the accommodation of expansion. The plan expects operational enhancements and technological innovations to play an important role in this development. These improvements should ease congestion, improve safety, increase economic productivity, and assist with compliance with federal air quality regulations.

The discussion of energy futures focuses on the availability and cost of petroleum and other fuels, and on the prospects for new energy technologies. Related predictions are:

1. The enormous efforts that are going into making transportation vehicles more energy efficient will ensure that liquid fueled vehicles will be around in the future.
2. As petroleum becomes increasingly scarce and as the price continues to rise, substitute fuels will be sought and found.
3. The increasing scarcity of petroleum will result in the continued rising cost for

fuel, which in the short run will tend to be offset by improved vehicle efficiency, but eventually will lead to less travel, unless cheaper fuels can be developed over the long run.

4. The problems of liquid fuels and resulting high costs will probably lead to a greater use of electricity in the transportation sector to power automobiles and rail systems.
5. The research on hydrogen will eventually pay-off and lead to the evolution of hydrogen-fueled vehicles.

The discussion of these issues and challenges, in the different time periods and with the differing probability levels, contributes to a plan that appears to incorporate consideration of these issues throughout the planning process. These issues shape the vision of the transportation system the plan is trying to achieve.

Pennsylvania

Pennsylvania bases its discussion of future challenges facing the state in the future not only on demographic trends and projections, but also on major issues identified through its public involvement process³. Pennsylvania contacted representatives from many stakeholder groups to gain input on the importance of various issues in the development of the plan and on the ideal future transportation system. Stakeholders were asked to rate both the importance of issues in developing the plan, and the desirability of characteristics of the future transportation system. The issues considered were:

- Improving safety of using the transportation system
- Improving systems that stimulate business growth
- Creating better linkages among different methods of transportation
- Reducing air pollution
- Minimizing taking of land for new transportation right-of-way
- Building new roads to reduce and prevent congestion
- Providing alternatives to single occupant car travel
- Restricting expansion into rural/forested areas
- Reducing time required to drive from home to work/shop

The characteristics considered were:

- Clean, quiet, frequent high-speed rail service between cities
- Easy switches among bus, rail, and car at transfer stations
- “Smart” electronic highways control traffic patterns/reduce congestion

³ For a more detailed description of Pennsylvania’s public involvement process, refer to the Public Involvement module of this report.

- Internal combustion engines replaced by less polluting sources of power
- Truck traffic reduced by putting truck trailers onto trains
- Bicycle and pedestrian routes separate from roads for cars
- People less dependent on their cars; use alternatives instead
- People-moving systems separate from freight to reduce car/truck conflicts
- Road building slowed in favor of investing more in other modes
- Many two-lane roads replaced by multiple-lane and divided highways
- Many people work at home through the Internet

The ratings given each of these issues and characteristics by each of the stakeholder groups are compiled into an overall matrix to analyze their relative importance. The result of this analysis sets the overall guidance for the planning efforts for the next twenty years, represented by the acronym PennPlan MOVES:

- M = Mobility: A high degree of mobility is enjoyed in Pennsylvania; this should not be diminished.
- O = Options: Transportation is too “unimodal,” with focus on the car. Options should be provided, promoted and linked seamlessly.
- V = Voices: Public involvement, the voices of constituencies, must be a major focus of transportation planning.
- E = Efficiency: Transportation systems must generate the most benefits per resources expended.
- E = Environment: Transportation should have minimal negative effects on the environment – it should be “sustainable.”
- E = Equity: Transportation should not give disproportionate advantages or disadvantages to any group.
- S = Safety: Transportation systems should be designed to maximize safety.

A discussion of the current state of Pennsylvania’s transportation system, along with factors outside of the direct system, follows identification of issues. The plan states that transportation is not an island, and so consideration of other factors is necessary. The combination of these other factors with the stakeholder-identified themes form the framework for the goals and objectives outlined in the plan. The plan provides the means to achieve the preferred vision. This linkage of public input, identification of issues, and formulation of goals builds a foundation for the plan to provide realistic, meaningful guidance for the plan period.

Oregon

To set the stage for discussion of major issues, the **Oregon Plan** articulates its vision and identifies associated performance benchmarks. “In working toward this vision of livable communities, economic prosperity and the transportation system that will serve them, we must consider where we are going and what the implications are for transportation.” The plan identifies five issues to consider:

1. Population and Transportation Projections – Preparing for Changing Needs
2. Economic Development – Expanding Access to a World Economy
3. The Environment – Protecting Oregon’s Quality of Life
4. Land Use – Changing Development Patterns
5. Technology – Innovations for Use, Today and Tomorrow

Each of these issues is initially presented in terms of a broad context over the plan period, followed by a discussion of specific transportation implications. In discussing the first issue, the plan states that Oregon’s population is projected to grow faster than the nation’s for most of the next forty years, with most of it concentrated in the Willamette Valley region. Thus, increased demand for transportation will be most prevalent in the Willamette Valley, with congestion becoming an increasing problem. The coordinated land use and transportation planning processes are projected to have a positive impact on urban form and travel needs and patterns. This provides guidance on areas in which to focus greater attention over the plan period.

Oregon’s economy is expected to continue to diversify, while continuing to be dependent on distant markets to sell its products. This will require all modes of transportation to be connected to the international economy. Highways will remain important, but air and intermodal freight services will become increasingly important. Rail, marine transportation and airport systems will take on increased importance because of their ability to link to distant markets.

Oregonians value the natural environment, but protection of water quality, wetlands, air quality, and endangered species is becoming more difficult. A number of federal and state statutes address these issues, and the plan expects this number to increase. The reductions in auto emissions and use of single-occupant vehicles are taking on increased importance in this atmosphere.

Oregon has well-defined land use policies, the goal of which is to create compact cities surrounded by farm, forestland, and open space. This goal has two major implications for transportation. First, transportation policy should favor more compact, mixed-use, pedestrian friendly developments. Second, facilities must be designed to support locally adopted comprehensive plans.

Advances in technology are anticipated in a number of areas, with implications for transportation. It is expected that the way transportation systems are used will be heavily influenced by the anticipated innovations in intelligent technology systems and alternative fuels. Additionally, the private sector will likely play a large role in producing these innovations, requiring government to work with the private sector to coordinate appropriate infrastructure and facilities.

Discussion of issues and development of the specific transportation implications help the state to define priorities. These priorities reflect the goals and policies that create the “preferred plan” for Oregon’s future transportation system.

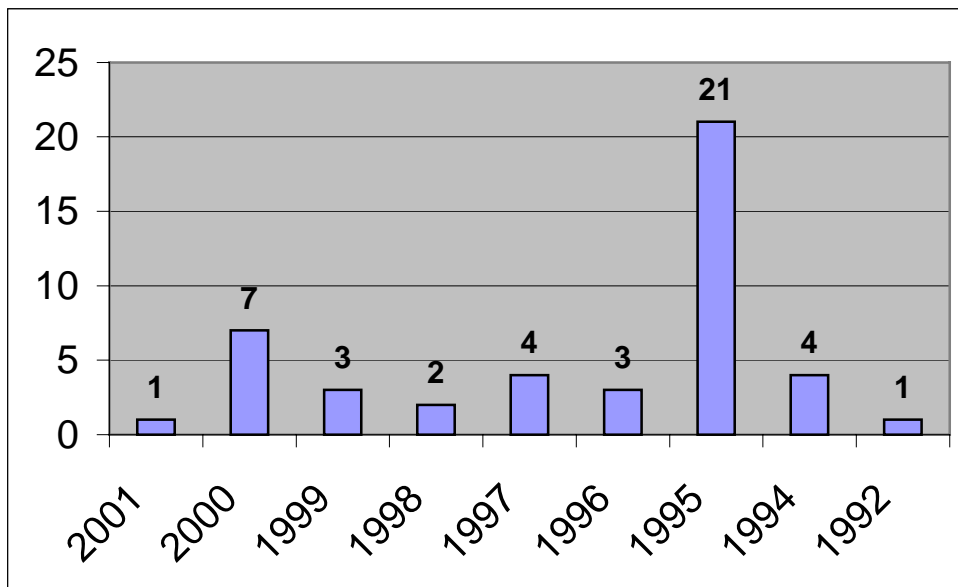
VI. Plan Cycle

The requirement for a statewide long-range transportation plan was instituted under ISTEA, which required all states to develop a statewide plan that was reasonably consistent in time horizon among its elements, but covering a period of at least 20 years. No update period was specified, beyond stating, “The plan shall be continually evaluated and periodically updated as appropriate.” ISTEA contained 15 planning factors that were to be considered in the development of the plan.

TEA-21 continues the requirement for the statewide transportation plan. TEA-21 contains the same requirements in terms of timeframe and update period as did ISTEA. However, TEA-21 streamlines the planning factors to be considered.

The plans reviewed in this analysis were developed under both ISTEA and TEA-21. Some states have updated plans that were developed under ISTEA, while for other states, the ISTEA plan is the one that remains in effect. [Figure 1](#) below illustrates the variety in the years in which the plans reviewed for this study were issued.

Figure 1: Years in Which Plans Were Written



The greatest number of plans was written in 1995, with 43 percent. The year with the next largest number of plans is 2000, shortly after the release of TEA-21. Overall, 25 percent of the plans have been updated in response to TEA-21, while the remaining 75 percent date from the ISTEA requirements. As there is no required update period in either ISTEA or TEA-21, plans written under either law are valid. Within the plans

themselves, however, 44 percent either identify an update interval or describe an update as underway. For those plans that identify an update interval, it is not clear that this interval is followed in all cases. For those plans being updated, the majority is being updated in response to TEA-21 and is expected to be available later in 2001-2002 for review.

VII. Public Involvement

All of the statewide transportation plans refer to a public involvement process involving general citizens, specific transportation stakeholders, or both. The methods used in gathering this input, the points in the planning process at which the input was obtained, as well as the stakeholders involved, differ greatly among states. During the review, we examined only the public involvement process described in the plan itself. We did not review the more detailed public involvement plans that may exist and could contain greater detail regarding the techniques used. Thus, due to the limited scope of the review, it is possible that many states engage in public involvement practices that are not captured here.

In both ISTEA and TEA-21 regulations, public involvement is expected to be seriously and substantively reflected in transportation planning at all levels. Many of the plans reviewed were written under ISTEA, but are still in force today under TEA-21; thus, both laws are relevant for this evaluation. TEA-21 states (23 USC, Section 135, (e) (3)) that the statewide transportation planning process should provide for participation by interested parties. It states that, “(i)n developing the long-range transportation plan, the State shall:

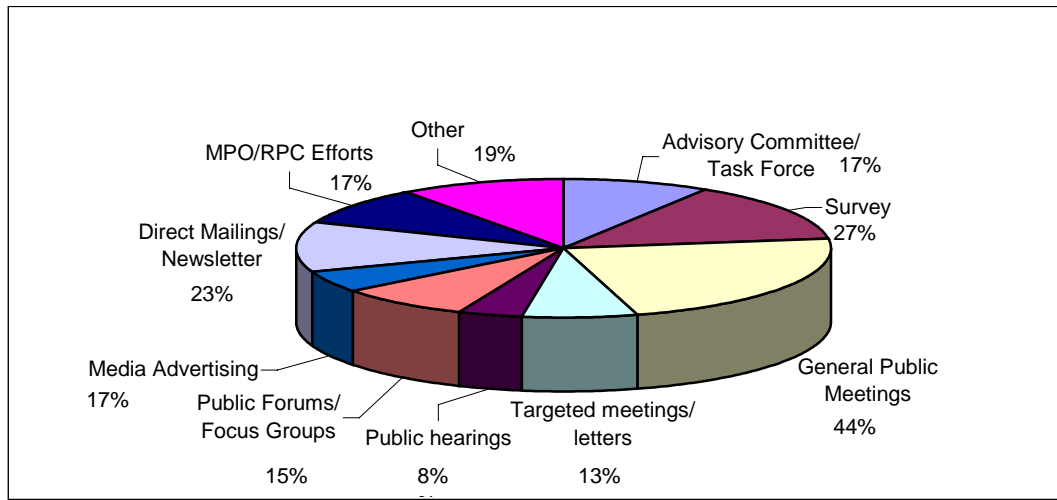
1. Provide citizens, affected public agencies, representatives of transportation agency employees, freight shippers, private providers of transportation, representatives of users of public transit, providers of freight transportation services, and other interested parties with a reasonable opportunity to comment on the proposed plan.”

The law does not specify steps that need to be taken to provide for public participation; the process is left to the discretion of the individual states. The strategies developed to obtain this input can and do differ from state to state. This section characterizes general trends in public involvement practices in statewide transportation planning and highlights practices that appear particularly successful or innovative. This information hopefully will assist other states as they improve their public involvement process.

Methods for Gaining Public Input

The methods through which states obtain input from the public are varied, as shown in [Figure 1](#). Public meetings, open to the general public, were the most common means used. Almost half of the plans indicate that the state engages in meetings to inform the public about the planning process and to answer questions and receive feedback. These meetings are generally held in several different parts of the state to obtain input from urban, rural and suburban populations. For example, *Indiana* held multiple meetings, both before the plan was written and after the draft was issued, in all of the development districts in the state.

Figure 1: Types of Public Involvement Activities⁴



While general public meetings are a very popular method, some states, like *New Mexico*, are concerned that these meetings only attract portions of the population that are already educated about the transportation system and planning process, and do not go far enough to obtain the input of the average citizen. To remedy this, many states conduct surveys or personal interviews, either on the telephone or by mail. For example, for the *Iowa* and *Missouri* plans, the states conducted surveys of statistically valid samplings of the population to gain representative views of the population at large. After obtaining initial stakeholder input, the *Kansas*, *Missouri*, *Nebraska* and *New Mexico* plans reflect statewide workshops conducted to analyze this input and formulate a consensus regarding the planning goals and objectives.

Twenty-three percent of the state plans indicate that mailings were sent to select groups of recipients. In many cases, these mailings were newsletters containing information on the status of the planning process. Some state plans, like *Colorado's*, state they have made an effort to keep their mailing database current and extensive. In other cases, these mailings have gone to selected stakeholder groups, such as identified transportation user groups or planning organizations. These targeted mailings, or, in some cases, meetings, took place in thirteen percent of the states reviewed.

In seventeen percent of the state plans, public input was obtained indirectly. These states rely heavily on the public involvement processes the state's MPOs use in the development of their plans, and incorporate that involvement by reference. However, *Indiana* sends staff liaisons to the technical and policy meetings of the MPOs. These liaisons participate in the MPO planning process, including public involvement activities, and incorporate that input into the statewide transportation plan. This results in a two-way flow of perspectives between the state and the MPOs.

⁴ Percentages in the figure total greater than 100 percent because many states use more than one method to obtain public input in the planning process.

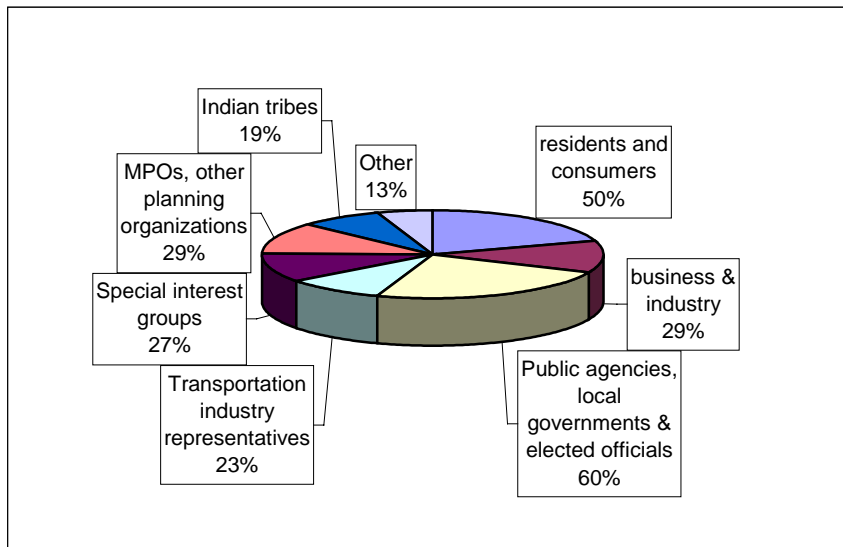
A different seventeen percent of the states use advisory groups or task forces. The membership of the task forces generally includes representatives from transportation planning organizations, stakeholders in the transportation community, as well as some individually identified interested citizens. In most cases, metropolitan planning organization representatives are members of the advisory groups. It was unclear from the descriptions of the advisory group membership whether these representatives are professional MPO staff or members of the MPO citizen council.

Stakeholders

The stakeholders identified as being involved in the planning process also varies, as shown in [Figure 2](#). Most states include MPOs, elected officials, private citizens, special interest groups, and some specifically identified community or business leaders. MPOs have their own public involvement requirements, and states can benefit from that process in the statewide planning efforts. As stated above, it is unclear whether the MPO representatives included in the statewide planning process were professional staff or citizen representatives. Many states, such as *Alabama*, *Georgia* and *Colorado*, specifically include summaries of the key points in the MPO plans and the comments received during the formation of these plans in the statewide plan. Also, as noted in the previous section, *Indiana* sends liaisons to attend MPO meetings and incorporates information from this contact into the statewide planning process. Other states, such as *Arizona*, include official representatives from MPOs in their advisory committees to provide metropolitan perspectives.

Other planning organizations that are sometimes included are Regional Transportation Planning Associations (RTPAs), Regional Planning Commissions or Organizations (RPCs or RPOs), Area Development Districts, and Rural Development Commissions. From the context of the plans reviewed, it appears that these regional organizations are separate and distinct from the MPOs. Elected officials can be members of the state legislature, members of the state's congressional delegation, mayors, judges, or officials from cities, counties and towns. They may also serve on MPO boards. Special interest groups might represent minority or "traditionally underserved" populations, environmental concerns, or a broad range of other issues. Community or business leaders range across a wide spectrum, but include representatives from Chambers of Commerce, hotels, farming, agriculture, or other industry leaders. Additionally, transportation providers and other government agencies are often mentioned as stakeholders in the process. These more specific stakeholder groups are often given individual briefings to gain buy-in on the direction of the plan.

Figure 2: Stakeholders Involved in the Public Involvement Process⁵



Point in the Planning Process where Public Input is Sought

State DOTs seek public input at many different points in the planning process. These points can be generally characterized as prior to starting the planning process, during the course of the process, or after the process is largely completed. Some states, such as *Georgia*, *Arkansas*, and *Pennsylvania* seek input at the beginning of the process from a large group of stakeholders to generate multiple scenarios or alternatives of the future of the transportation system and to gauge the importance of various issues and modes. This input helps to form the overall vision and strategies presented in the plan.

Many states seek input at multiple points. *Oregon*, for example, asks its advisory committees for input on overall goals and direction before beginning the planning process. Then, after this initial planning has been done, it holds open meetings to ensure that the general public agrees with these goals. The purpose of the public involvement exercise at this point is to obtain agreement, or buy-in, on the goals and objectives, as well as to gain alternative perspectives on priorities.

Eight of the state plans indicate that public input is sought on a continuing and ongoing basis, even after publication of the plan. *Florida*, *Colorado*, *Delaware*, and *Pennsylvania* are among the states that have an ongoing public involvement process. This creates a perception that the plan is more of a living, rather than a static document -- one that is continually influenced by stakeholders. However, none of the states reviewed appear to specify a means of evaluating the effectiveness of the public involvement process, although some states, such as *Kentucky*, did list as a goal of the planning process a more involved, continuing public involvement effort.

⁵ Percentages total greater than 100 percent, because many states involve multiple stakeholder groups.

All states have a period of public comment or review, during which the draft plan report is available to the public for comment before it goes to final publication.

Noteworthy Practices

The following section describes innovative practices documented in the state plans that go beyond the typical efforts outlined above. The states identified use techniques that involve stakeholders in a manner that clearly demonstrates the importance and influence of the public involvement process. These techniques produce plans that reflect insights gained from the public involvement process. There are many innovations taking place in the field of public involvement; the states listed do not constitute an exhaustive list. There are likely to be other innovations beyond the scope of this review not captured because they were not described in the plans. These practices illustrate approaches that may prove interesting to other states.

Pennsylvania

Pennsylvania's approach to public involvement covers a broad range of population groups. These fall into five overall categories: planning professionals, residents, commercial, visitors, and other. Within each category, there are subcategories. The planning professionals include appointed and elected officials, as well as professional planners. The residents are from rural, urban, and suburban parts of the state. Within the commercial sector, representatives from business, tourism, and agricultural and dairy interests were consulted. Visitors passing through the state via automobile or truck, using Pennsylvania's transportation system, were also interviewed. Finally, within the other category, "millennials," or children, and "visionaries," or transportation experts, were interviewed to incorporate their views on where Pennsylvania's transportation system should be in the year 2025.

The interviewees rated the current system by mode, and then by that mode's importance the next 25 years. They were also asked what principles or philosophy should guide a 25-year transportation plan and the specific elements they desire in the future transportation system. These results were compiled into one major theme that provides direction for statewide goals.

The visionaries contributed to two sets of scenarios of what transportation would look like in 25 years -- one of "debatable futures" and one of "consensus scenarios." The plan summarizes these scenarios to demonstrate the diversity of thinking on the future as well as to enable readers to consider possible features of the transportation system of the 21st Century. These scenarios cover topics such as the different ways to accommodate increased demand, ways to influence travel behavior, roles that different modes will play, and the influence those non-transportation policies will have on these futures.

The **Pennsylvania Plan** takes an innovative approach to public involvement and vision. The vision could play an important role in forming future transportation policies, particularly if the public is educated on possibilities and ramifications. The consensus scenarios guide the policies in the plan, complementing the information on what Pennsylvania's population will look like in 2025. The combination of public involvement and the vision results in a comprehensive and provocative plan, with detailed goals, objectives and performance measures, providing a very clear road map to guide the transportation system through the next 25 years.

New Mexico

The New Mexico Statewide Long-Range Plan includes an attachment: "Public Views on Transportation: The Results of the Six New Mexico Citizen Conferences on Transportation." During prior public involvement efforts, it became clear that the average citizen was not involved in the DOT's planning process, and was uninformed about the state's responsibilities for transportation infrastructure; costs associated with preserving and improving infrastructure; and responsibilities of the levels of government for transportation. The public involvement process was revised to correct this.

New Mexico held citizen's conferences to bring the public into greater contact with the planning process and provide education about the issues. Six to twelve randomly selected citizens, representing diverse views and demographics, participated in daylong meetings. Citizens asked policy questions to an expert panel and gained an understanding of the overall system. The citizens reviewed three long-range transportation scenarios:

- Extending the Life of State Highways;
- Improving Major State Highways; and
- Improving Statewide Public Transportation.

The experts were available for consultation. The goal was to reach a consensus around the best scenario for New Mexico, given varying needs and limited funding. The recommendations of the conferences guided priorities pursued in the Plan.

Although the conferences provided a good way for a limited number of people to become very involved in the planning process, there was a need to pass these experiences and the knowledge gained on to the rest of the population. To accomplish this, the state held a large media campaign around each conference. All six conferences received press coverage. The department believes the media provided the general public with a sense that New Mexicans as a whole agree with the goals generated in the citizen conferences and put forward in the plan.

Missouri

Missouri engaged in three activities to collect public input during development of the Long-Range Transportation Plan. The first activity was Road Rallies, which were interactive tours of parts of the state highway system and bridge system. Members of the public, MoDOT employees, and civic leaders toured various parts of the system rated by level of importance, common roadway characteristics, including smoothness of driving surface, effectiveness of striping, traffic signals and other features. Separate sessions were held for civic leaders and members of the public from throughout the state. The information gathered at these sessions was combined with engineering principles and other technical data to develop standards for the state's highway and bridge system.

The second activity was a statewide public survey conducted by telephone and mail. The overall importance of various modes of transportation was rated in 2,450 responses from civic leaders and residents. The final stage of the public involvement effort was consensus-building sessions. Participants were asked to consider the relative importance of each of the five modes of transportation addressed in the statewide survey. Six sessions were held, each involving approximately 35 participants. The participants were asked to work together and consider how the group might allocate a theoretical \$100 among the five modes of transportation. After participants agreed about the modes, they were asked to divide each mode's allocation between its top priorities, identified in the public survey. The results of these consensus-building sessions are included in the goals developed in the plan.

Missouri felt that asking stakeholders to make a decision regarding the allocation of funds would be a useful exercise in determining true priorities. This exercise demonstrates the challenges associated with planning transportation improvements, given the funding limitations and the need for trade-off decisions. This process, if built upon in the future, will help the Missouri Department of Transportation continue to develop ways to work toward meeting Missourians' expectations.

Florida

Florida conducted over 50 public outreach meetings to gain a sense of the public's concerns. These meetings consisted of public workshops, exhibits at malls and transportation terminals, and other brainstorming and focus group meetings that attracted more than 2,000 residents and tourists. The views and ideas generated were then reviewed at a statewide workshop that involved almost 200 representatives of MPOs, local governments, environmental interests, private sector interests, and state and regional agencies. The purpose of this workshop was to reach consensus on strategic actions to respond to public concerns.

Florida's next step is particularly innovative. Comments received were included throughout the document to demonstrate the responsiveness of the plan to the public's

concerns. For example, in the Public Involvement section of the plan, a comment from the Cape Canaveral Public Meeting, “Get the people involved before and during the process and you should have fewer complaints,” was inserted. Similarly, in the “How Do We Get There?” section of the plan, a comment was inserted from the Gainesville Public Meeting, “[We need] the best of each mode, plus the best aggregate, to utilize the most resources at the least cost: dollars, environment, and natural resources.” Other representative comments were included throughout the plan. While this cannot represent all the comments received, it does demonstrate that the plan is attempting to be responsive to comments, which are heard and heeded.

VIII. Relationships between State DOTs and Other Governmental Agencies

Successful statewide transportation planning does not occur in a vacuum. As noted in other modules, the transportation system has broad-ranging impacts on many areas of the state, including the economy, the environment, land use patterns, and energy consumption. The policies and programs of many other agencies can have important effects on the state plans. To successfully implement transportation policies that have desired results, coordination with other governmental agencies is required. The more developed the relationship and the more detailed the respective roles of the agencies in this implementation, the greater the likelihood for successful policies.

Both ISTEA and TEA-21 placed considerable emphasis on coordination between the state DOTs and other stakeholders, including MPOs, Tribal governments, and local governments. The majority of the plans state that they have undertaken a cooperative effort. Forty-four of the 48 plans, or 92 percent, state that they involve coordination with other statewide agencies. Similarly, 41 of the 48 plans, or 85 percent, state that they involve coordination with federal or local agencies. Some of the plans state that they reflect coordination, while not listing the specific agencies involved. Many of the plans, however, cite specific agencies and specific coordination efforts. A few plans discuss how to operationalize the roles and responsibilities of the agencies related to the various issues.

Areas of Coordination

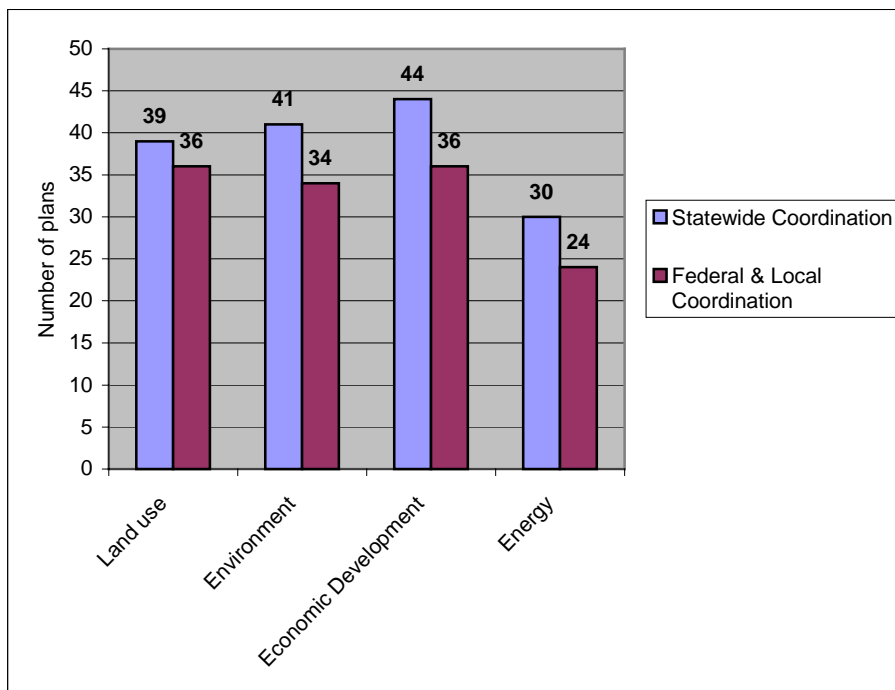
The state plans discuss coordination in a variety of topic areas. The four that are most commonly addressed in a cooperative manner are:

- Land use
- Environmental concerns
- Economic Development
- Energy

As shown in [Figure 1](#), the plans discuss coordination efforts with other state agencies more often than with federal or local agencies. Forty-four of the plans, or 92 percent, discuss statewide coordination on economic development, while 36 plans, or 75 percent, discuss how to coordinate economic development with local or federal agencies. The topic with the second greatest number of references to statewide coordination is environmental, with 41 of the plans, or 85 percent. Environmental issues are identified as coordinated with federal or local agencies in only 34 of the plans, or 71 percent. Coordination of land use on a statewide level is noted in 39 of the plans, or 81 percent. Land use is identified as coordinated with federal or local agencies in 36 of the plans,

equal to the number that coordinated on economic development. Energy issues are coordinated in the least number of plans at all levels. Thirty plans, or 63 percent, indicate that there had been coordination involving energy concerns statewide, and 24 plans, or half of the plans, identify energy coordination with federal or local agencies.

Figure 1: Areas of Coordination in Statewide Transportation Plans



As reflected in the plans, coordination takes a number of different forms. For example, *Delaware* and *Michigan* have statewide coordination of land use issues as major plan goals, although they do not provide a more specific focus within that topic. Similarly, *Maine's* plan states the “transportation planning decisions, capital investment decisions and project decisions [should] (b)e consistent with the purposes, goals and policies of the *Comprehensive Planning and Land Use Regulation Act*.” However, those purposes, goals and policies are not detailed in the plan. *Kansas's* plan, on the other hand, is trying specifically to combat sprawl through its coordination of transportation and land use.

Environmental issues covered range from noise and water pollution to wetlands and endangered species preservation. *Colorado's* plan contains a specific Environmental Policy Statement, which reads:

“CDOT will promote a transportation system that is environmentally responsible and encourages preservation of the natural and enhancement of the created environment for current and future generations. We will incorporate social, economic, and environmental concerns into the planning, design, construction,

maintenance, and operations of the state's existing and future transportation system. With the active participation of the general public, federal, state, and local agencies, we will objectively consider all reasonable alternatives to avoid or minimize adverse impacts."

Colorado's plan discusses particular areas of focus, such as air quality, wetlands, ecology and wildlife, but contains little discussion of the specific agencies with which these coordination efforts are taking place.

In the energy field, the plans had several different areas of focus. Much of the focus is derived from the Clean Air Act Amendments and targets air quality, emissions reduction, energy conservation and alternative fuels. Some states, such as *South Dakota* and *Illinois*, discuss the anticipated reduction in gas tax revenue that will result from a shift to more fuel-efficient vehicles and alternative fuels.

Specific Agencies Mentioned

As noted above, not all of the plans mention specific agencies with which they are forming cooperative relationships. There were notable differences between the types of agencies mentioned on the statewide level as opposed to those mentioned at the federal or local level, as shown by [Figure 2](#).

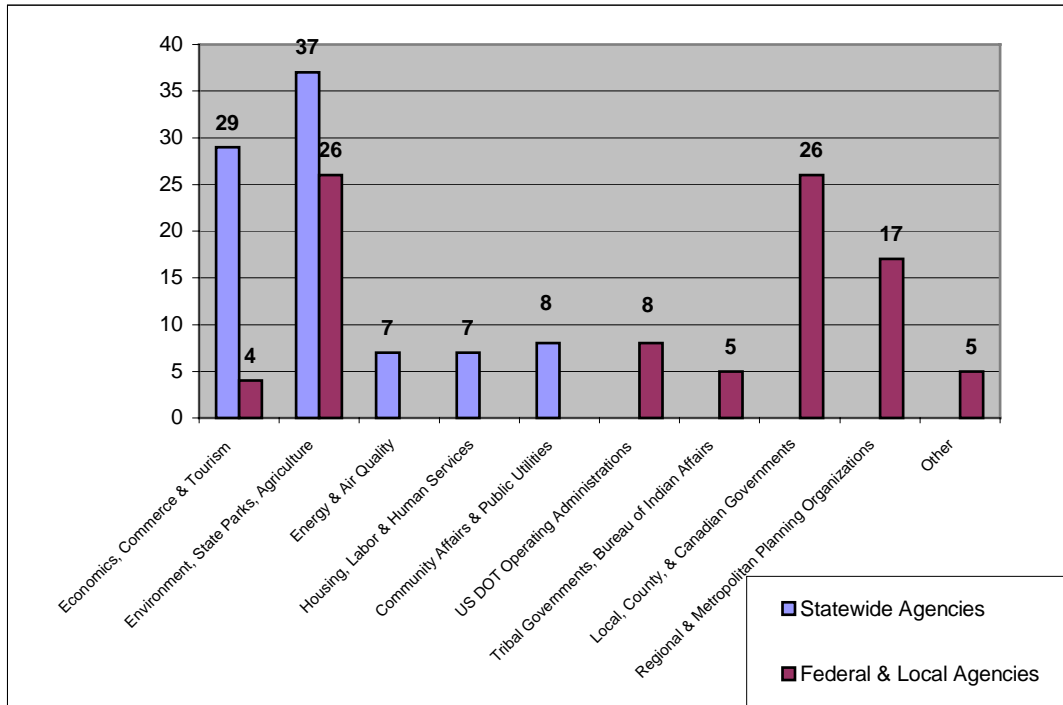
Environmental agencies, at state and federal levels, are most often cited as having cooperative relationships with state DOTs, with 37 and 26 specific agencies being mentioned, respectively. On a statewide level, agencies working on issues of economics, commerce or trade have the second highest mention of specific agencies, with 29. However, only four specific federal or local agencies were mentioned in this area. Most of the plans appear to indicate that these issues are ones that need to be coordinated on a statewide level in order to be effective. For example, one of *Arizona's* performance goals is: "To develop a transportation system that promotes Arizona's economic development, accommodates the State's population growth, and serves permanent and part-time residents and tourists." Within this goal, several objectives and policies are mentioned. These are:

1. To expand the elements of the transportation system to meet population and economic demands.
2. To assure effective transportation linkages for goods and passengers to attract a larger share of international and interstate trade to Arizona.
3. To provide a transportation system that supports and enhances the potential for economic growth and development of all areas of the State in a manner consistent with local plans and policies.
4. To develop a transportation system that supports recreational and tourism travel throughout the State and improves access to recreational destinations in a manner

consistent with the maintenance and integrity of the attraction.

The policies listed within these objectives illustrate the need and intent to coordinate on a statewide level to achieve these goals. Interestingly, the federal agencies specifically mentioned in this section are the National Park Service, the U.S. Forest Service, and the U.S. Bureau of Reclamation. All these agencies are included in the grouping of environmental agencies rather than economic development agencies, demonstrating how interconnected these issues are.

Figure 2: Specific Agencies Mentioned



Alabama's plan discusses regional coordination with statewide agencies to efficiently address economic development issues. Economic development regions are being developed, which are “intended to give people and resources in a geographic subarea of the state an opportunity to work together in a coordinated fashion to begin addressing their own local barriers to economic success.” The activities that these economic development regions are to carry out are to:

- Assess competitiveness and develop and implement a plan or program to address identified weaknesses;
- Increase the education level of the work force;
- Raise private capital required for matching funds;
- Work with representatives of tourism, transportation and existing economic

agencies (such as the Alabama Department of Economic and Community Affairs and the Alabama Development Office) on specific projects and concerns;

- Provide training for local leadership;
- Explore and develop economic cluster possibilities; and
- Identify and implement all feasible methods to maximize opportunities and minimize obstacles.
- Identify possibilities for expanding existing industries.

Alabama's plan considers these economic development regions, and addresses needs and identifies recommendations through seven distinct areas where possible. The plan identifies these areas based on common transportation issues and geographic and cultural issues. The state hopes that by approaching these statewide issues on a regional level, the transportation plan will be more easily integrated into the recommendations of the economic development regions.

Noteworthy Practices

The following section briefly describes some state plans that exhibit innovative approaches to forming cooperative relationships with other agencies. These practices demonstrate a commitment to cooperative relationships that is evidenced by the goals and strategies outlined in the plan. These plans consider how these relationships will be put into actual practice, and describe the specific roles of the various agencies. This level of detail gives the goals and strategies advocated by the plan a greater chance of success, as consensus is more likely among the responsible agencies. There are many innovations taking place in this area; the states listed below do not constitute an exhaustive list. There are likely to be other innovations that are beyond the scope of this review because they were not described in the plans. These practices illustrate approaches that may prove interesting to other states.

Ohio

Ohio's plan lists as one of its performance goals:

“Cooperative Planning Process and Transportation Efficiency: Use a cooperative planning process to develop an effective and efficient transportation system and organizational decision-making process through the use of system management programs and public participation.”

Within this goal, one of the specific policy statements is, “Foster intergovernmental transportation partnerships by encouraging improved coordination among state and local entities within Ohio, and by working cooperatively with governments and transportation agencies outside the state.” The plan describes six initiatives to accomplish this policy objective:

1. Identify transportation needs that extend beyond the state's borders and promote multi-state solutions that will meet the needs of residents and businesses of both states.
2. Undertake Federal Aviation Administration (FAA) funding selection using Ohio DOT's Division of Aviation as the planning and review team on behalf of the FAA.
3. Strengthen cooperative ventures and develop more comprehensive planning strategies with other state agencies and the general public.
4. Foster coordination among human service transportation providers and other agencies, as appropriate.
5. Design and carry out an Intermodal Management System.
6. Integrate the usage of bicycling and public transportation modes.

It is evident from these initiatives, even without describing the sub-elements, that Ohio's plan is striving for coordination at many different levels, from neighboring states, to U.S. DOT Modal Administrations, to human service agencies, and other state agencies. The sub-elements provide for further elaboration of the initiatives, and further demonstrate the commitment to coordination.

What is not as evident from that list, but is an integral part of the plan, is the coordination with MPOs. The plan acknowledges the ISTEA requirement that the Statewide Transportation Plan be consistent with the plans developed for the metropolitan areas of the state. To meet this requirement, the plan includes overviews of each MPO's transportation plans, programs, and projects. This coordination is further demonstrated in the "Micro Phase" of Ohio's plan. More than half of this 466-page document is devoted to detailing the MPO plans, and the specific modal and intermodal objectives and issues targeted in each plan. The results of these MPO plans were rolled forward into the detailed descriptions of the current and future needs of the statewide transportation system, also described in the Micro Phase.

Nebraska

The **Nebraska Plan** clearly presents issues, and within these issues, presents goals and responsible entities. The plan also includes an "implementation plan," which elaborates on these issues and goals. The plan disaggregates goals into suggested strategies, provides an action plan to meet the goals, identifies sources of funds, and describes public involvement efforts and participating agencies. This level of detail demonstrates extensive strategic thinking and coalition building.

The plan has several issues and goals directly relating to coordination with other agencies:

Issue 10: Better Coordination of Intermodal Forms of Transportation

Goal: Instill the practice of intermodal coordination and consideration by all transportation interests when planning and developing intermodal system enhancements.

Issue 12: Better Coordination between Land-Use and Transportation

Goal: Improve the process for the coordination of future land-use development when planning long-range transportation improvements.

Goal: Develop a process for effective cooperation between developers and transportation agencies.

Goal: Improve the coordination of land-use and community development plans to recognize and enhance older and historic neighborhoods, town centers and downtowns, archeological sites, rural and cultural landscapes, and other places and their environs with long-range transportation plans.

Issue 13: Interagency Coordination

Goal: Resolve transportation issues through increased coordination between agencies.

All of these issues and goals are elaborated on in the Implementation Plan. The details put forward around Issue 13 serve as an example. As background on the issue, the plan notes that agencies working together can more effectively arrive at solutions to transportation problems. It also notes that the sharing of agency long-range plans can facilitate coordinated infrastructure improvement and reduce potential conflicts. To this end, an action plan is detailed, describing how to achieve the following strategies:

- A. Establish a process utilizing input from various governmental agencies to:
 - (1) Identify areas that could benefit from interagency coordination
 - (2) Establish a process to obtain that coordination
 - (3) Identify and utilize working committees to:
 - a) Establish measurable benchmarks
 - b) Prepare a report
 - c) Identify stakeholders
- B. Evaluate the current practices of interagency contracting and coordination and make appropriate recommendations.
- C. Encourage the utilization of the process, recommendations and guidelines for interagency coordination developed in Strategy A.

The plan notes that legislation may be necessary to permit interagency contracting. Funds are assumed to be available within the existing budgets. The public involvement process identifies interagency coordination as a major issue.

The lead agency for this issue is the Nebraska Department of Roads. Twenty-five other agencies are identified as being active participants in this effort. Among these agencies are:

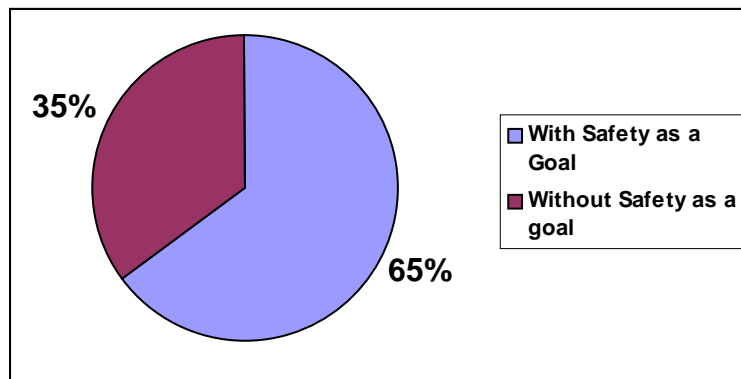
- Nebraska Legislature – Transportation Committee
- Governor’s Policy Research Office
- Nebraska Game and Parks Commission
- Nebraska Association of County Officials
- Nebraska Commission on Indian Affairs
- Nebraska League of Municipalities
- Nebraska Department of Education
- Nebraska Department of Economic Development
- Nebraska Rural Development Commission
- Nebraska Energy Office
- Nebraska Emergency Management Agency
- Metropolitan Planning Organizations

Coordination was one of the concerns most commonly raised while formulating the statewide plan. The plan notes that communication and interaction had been inhibited by uncertainty over the appropriate persons to contact, or not getting the appropriate information to those people at the appropriate time. The plan overall has reduced much of the uncertainty by identifying the responsible agencies for each of the performance goals and strategies put forward in the plan. The coordination goals discussed above are in the plan in addition to the identification of coordinating agencies throughout. These coordination efforts appear to have shaped the plan and the policies advocated in it from the beginning of the process to the final result.

IX. Safety

In its Strategic Plan, the United States Department of Transportation has as its first goal: “**Safety** – *Promote the public health and safety by working toward the elimination of transportation-related deaths and injuries.*” This is a major focus in many activities within the Department of Transportation. This is also true for the majority of plans reviewed. Of the 48 plans reviewed, all but two discuss safety measures. Thirty-one of the 48 plans reviewed, like the DOT Strategic Plan, have safety as one of the explicit overall strategic goals addressed in the plan, as illustrated by [Figure 1](#) below.

Figure 1: Plans with Safety as a Goal



In addition to the 31 plans that include safety as an explicitly stated strategic goal, another eleven address safety broadly throughout the plan. As shown in [Figure 2](#), 42, or 87 percent, of the plans incorporate safety throughout the planning process, whether as an explicitly stated goal or in a more general manner. Fourteen, or 29 percent, of the plans list some very specific actions that are planned over the twenty-year plan period to address safety measures. Thirty-four of the plans, or 87 percent, state that safety is a consideration across all modes of transportation.

Some plans have both broad goals and specific actions included in the plan. In *Ohio's* plan, for example, there is a performance goal to improve the safety of *Ohio's* transportation resources by ensuring that the safety and well-being of customers are primary considerations in the design, development, and operations of the state's transportation investments. Within this goal are policy statements, and within the policy statements are initiatives, with supporting specific actions.

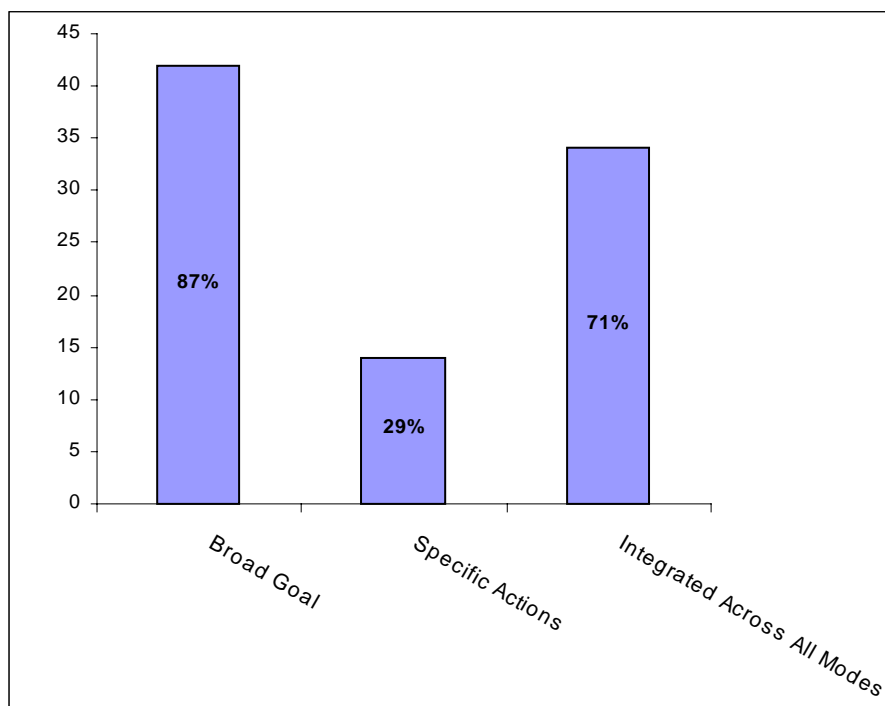
Colorado's plan similarly has a broad goal to work cooperatively to promote safety in transportation through education, engineering and enforcement. It will support innovative programs to enhance user, worker and vehicular safety, to improve conditions and facilities, and to reduce the risk of injuries, fatalities, and related costs. It then

incorporates this goal into a performance-based transportation investment strategy. The plan states that Colorado will use this system when allocating available funds. Safety is one of five investment categories used in this system:

1. Safety
2. System Quality
3. Mobility
4. Strategic projects
5. Program delivery

The strategic project category refers to 28 high priority statewide projects; the plan notes that each project produces benefits for the Mobility, Safety, and System Quality categories. The plan lists safety goals and objectives to guide CDOT in achieving the goal. Performance measures are currently being developed to measure progress in these objectives.

Figure 2: Manner in which Plans Addressed Safety⁶



Pennsylvania's plan includes safety as a strategic goal, as well as an overall theme resulting from its public involvement process. *Pennsylvania's* plan identifies a number of objectives for the plan period, all of which aid in simultaneously attaining multiple goals, including safety. It also has performance measures and targets to measure achievement of the goals. For example, there is an objective to “adhere to ‘maintenance first’ policies

⁶ Numbers do not total 100 percent because some plans fall in multiple categories.

in the allocation of financial and other resources.” This is identified as aiding in achievement of the safety goal, as well as the goals of expanding jobs and economic opportunities; making transportation decisions that support land use planning objectives; maintaining, upgrading and improving the transportation system; and ensuring accessibility and mobility for everyone. PennDOT’s performance target for this objective is to expend 80 percent of its resources on maintenance programs and projects. This is the plan’s definition of success in adhering to maintenance first policies. The performance measures provide a clearly defined target level, allowing accountability in measuring progress toward achieving the goal.

Another of Pennsylvania’s objectives that supports the safety goal is creating a state airport system plan, in cooperation with local and regional planning organizations. This objective simultaneously meets the goals of informing and involving the public and improving customer service. The cooperation cited in the objective illustrates how other planning organizations will be included in safety decisions to be made over the Plan period.

Of the plans that address safety, 31 state that safety is a consideration in all modes of transportation. Other plans address only a few modes

Noteworthy Practices

The following section briefly describes innovative ways in which safety is reflected in several highlighted plans. These plans move beyond the more typical efforts outlined above. In many cases, the plans apply safety considerations at important stages of plan development and describe how safety is incorporated in the statewide planning process. The plans emphasize the importance and influence of safety to the transportation system through:

- Consideration in the prioritization process.
- A broad strategic goal with innovative means to accomplish it, and
- Vigilant monitoring of progress toward meeting these goals.

There are many safety innovations taking place; the states listed below do not constitute an exhaustive list. There are likely to be other innovations that are beyond the scope of this review because they were not described in the plans.

North Carolina

North Carolina’s Goal 4 is: “Continually improve all safety aspects of the transportation system and workplace.” Elaborating on this goal, the plan states:

“The safety of the State’s transportation system is a major concern of NCDOT. In 1993, there were over 180,000 motor vehicle accidents in North Carolina,

resulting in over 129,000 injuries and almost 1,400 fatalities. Concern with public health and safety requires us to improve transportation safety through improvements in the design and operation of transportation facilities, educational programs, and greater enforcement of state traffic laws.”

Within this goal are two objectives: “Improve the safety of the traveling public,” and “Continue to improve work zone and workplace safety.” The discussion of these objectives includes current efforts toward attainment, as well as the outline of several specific strategies to further the successful attainment of the goal and the objectives.

The plan describes several actions that help to attain the first goal. The first is the development of the highway safety management system, to ensure that all opportunities to improve the safety of the traveling public are identified, considered, implemented where appropriate, and evaluated with the overall goal of reducing the number and severity of accidents on the highway system. Five major areas are to be addressed by this system; a fifteen member Governor’s Highway Safety Commission will review and monitor its operations. This Commission will have other duties, including establishing highway safety goals, reviewing proposed highway safety legislation, and surveying public opinion.

The Governor’s Highway Safety Program is a public-private partnership formed to improve public awareness of traffic safety in the state. Additional safety-related actions taking place within the Division of Motor Vehicles, the Public Transportation Division, the Rail Division, the Traffic Engineering Branch, the Construction Branch, and the Office of Bicycle and Pedestrian Transportation are also discussed. Safety appears to be well integrated throughout the transportation system, based on the descriptions provided in the plan.

The plan intends to further these efforts through several strategies. These include the development of a safety analysis procedure and a systematic evaluation of safety deficiencies on all fully controlled access highways. This will help to identify problem areas as they occur and allow the state to correct them in a timely manner. Another related strategy is to develop counter measures to address areas identified as deficient, including:

- young drivers
- alcohol related crashes
- trucks
- hazardous materials
- seat belt usage
- driver fatigue

Other strategies include

- increasing public awareness,
- better signage and guidance, and
- upgrades in rail-highway at-grade crossings.

These strategies indicate that North Carolina will expand the safety measures that already exist in the transportation system. They also indicate that there will be pro-active monitoring of the system with evaluations of problem areas and corrective actions taken in a timely manner.

Maine

Maine also includes safety as a primary goal of the plan. The other goals are

- global competitiveness
- improve access and mobility
- environmental protection
- public involvement
- intergovernmental coordination
- system preservation
- improve system efficiency

In its description of the current state of the transportation system, the plan describes current safety statistics, with a focus on highway statistics but incorporating all modes. It identifies areas that will need increasing focus, such as

- run off road crashes
- crashes with bicycles, pedestrians and animals
- public grade crossings with the return of passenger rail

The section of Maine's plan entitled "Getting There" lists actions, within each mode, that it will take to achieve the primary goals. The description of each action points out the specific goals it supports. Safety is integrated throughout the actions detailed in the plan. For example, potential applications of intelligent transportation systems are described that apply to several modes, and support increased safety. The plan also discusses interconnections between the modes, and points to increased ease in transferring between modes as supporting safety goals.

In addition to integration of safety throughout the actions, the highway section has a separate safety discussion. This discussion notes that safety improvements can best be

accomplished by addressing the three areas that affect transportation safety: motor vehicles, physical attributes of the transportation system, and human factors. Motor vehicle manufacturers are expected to continue to improve vehicle safety, and MDOT will work with its partners to improve public awareness of the proper usage of safety equipment. MDOT will work to identify existing and potential safety problems on Maine's roads, with emphasis on the categories in which Maine exhibits higher crash occurrence levels. MDOT will also work to reduce contributing human factors such as road rage through effective transportation safety advisories, and increasing public awareness of the proper usage of the transportation system.

Louisiana

As one of its overarching “values,” or principles it trying to further, Louisiana’s plan lists safety. To that end, its Goal #5 is:

“To improve safety in all transportation modes through timely maintenance of existing infrastructure, development of new infrastructure, enhancement of operational controls of both passenger and freight movements, and through expanded public education and awareness.”

The **Louisiana Plan** uses Pavement, Bridge, Safety, and Congestion Management Systems to advance this safety goal, along with increased public awareness and enhanced control and communications systems. The Pavement and Bridge Systems address timely maintenance and rehabilitation, creating better and safer road and bridge conditions. The Safety System addresses air, land, and water transportation, assisting the state in reducing injury and property damage accidents. The Congestion Management System maximizes the efficiency of the existing transportation system and minimizes the need for investment in new infrastructure. These efficiency improvements are intended to reduce the likelihood of accidents.

In addition to its management system, the state plans several other actions to achieve this goal. It will review all safety awareness, education, and training programs to improve their effectiveness and achieve increased cooperation among state and local governments, and private organizations. It will develop and implement new programs where necessary to enhance transportation system safety. It will work to enhance transportation operations control and communications systems to improve safety and efficiency.

Louisiana’s plan lists potential projects to improve the transportation system over the next twenty years. The plan describes a methodology to rank these alternative projects using four factors: transportation economics, economic development, environment, and safety. These factors have criteria within them that are used in the evaluation process. Within the safety category, these factors were:

- Reduction of collision potential
- Reduction of collision severity
- Reduction of hazardous-materials spill potential
- Hurricane evacuation capabilities
- Overall community safety

A scoring technique provides a basis for ranking transportation improvement alternatives. A score of –30 to +30 is assigned to each criterion based on the results of the evaluation. The criteria within each category are weighted equally in the final scoring process, as are the categories themselves. The total score for each transportation alternative was determined through summation of the mean scores of all four categories. The alternatives were then ranked according to their total score, and arranged into three priority-level tiers.

By including safety-related criteria in the evaluation process, the Louisiana plan includes safety measures in its overall prioritization process. Safety was placed on equal footing with the other categories in determining whether a project should be included in the long-range transportation forecast. As a result of this process, items such as railroad grade crossing improvements, variable message signage on certain highways, port infrastructure development and a safety/inspection program for fixed guideway mass transportation systems are included in the first tier programs.